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No. 4.

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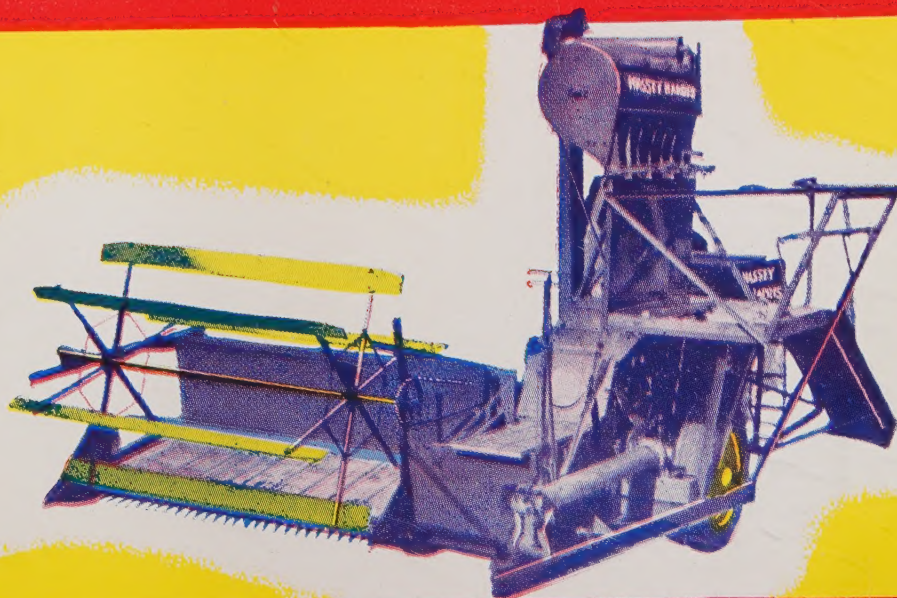
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The present highly developed dairy industry in New Zealand has now reached such a stage of efficiency—on lines which absorb the whole of the milk, or involve the extraction of many of the most important nutrients

Rearing Dairy Calves

—that the rearing of calves for herd maintenance is a position which calls for the serious attention of the dairy farmer. The farmer must consider his future herd, and it is in most cases sound economy for him to save and rear well a number of his best calves.

BEFORE the advent of the dairy industry, a great number of calves were reared under natural conditions; now it rests with man to provide an artificial substitute for the whole milk intended by nature—but now manufactured into butter and cheese—to rear the calf in such a manner that the highest standard of development may be maintained.

It is well for the young dairy-farmer to remember that when rearing calves to-day they are being reared in an artificial manner. As separated milk alone cannot pos-

are not mixed according to instructions; if the right quantity is not given to each calf, or at the proper temperature; or if some of the conditions are not complied with (and more especially when all of them are neglected) the result cannot but be unsatisfactory.

Whether or not the newly-born calf should be left for one day or three days on the mother is a matter of opinion. If taken away when a few hours old, the cow settles down much better than if the calf is left on for three days. It is essential, however, that the calf should always receive the mother's first milk, which is not only a wonderful protective food, but it also serves to stimulate the digestive organs and stomach into action, so cleansing the system. The cow should also receive attention at this stage, and a sharp look-out kept for any abnormal condition.

— By —

H. R. DENIZE,

Principal Inspector, Livestock Division,
Wellington.

Housing the Calf

When the calf is removed, it should be placed in a warm, well-ventilated, clean, dry shed, with plenty of bedding on a board floor and with a good fall to turn off all water. Good housing at this stage is a most important factor, as calves may be kept in a properly designed calf-house for three to six weeks, according to the weather conditions. Excellent results have been attained by keeping calves confined in a properly-constructed shed, with water, green feed and hay for as long as eight weeks.

sibly replace whole milk, something should be fed with the separated milk to replace the butterfat removed. Artificial feeding is, and always has been, a most difficult matter, but to-day it is possible to procure a properly-balanced ration very closely resembling the mother's milk.

Care in Feeding

The feeding operations should be the responsibility of one person who is thoroughly reliable and painstaking. Where the skim milk or whey is supplemented by other foods, and a mixed diet is given, care and attention at every stage are of great importance. If the ingredients

Quantity to Feed

As to feeding, the usual practice is to feed the calf twice daily, but thrice daily feeding will give better results, and can be recommended for the first three weeks, because long fasting will cause digestive troubles, which always, more or less, check the growth of the calf for the time being.



Take Your Lunch Seriously!

Don't let a 'scratch' lunch undermine your health. Too many 'fancy' foods—cakes, sweets, pastry—throw your diet out of balance. You can *plan* your lunch to give you more energy and cheerfulness, and less fatigue.

ADULTS—Choose as a basis for Lunch: Milk, cheese, egg (if any), fish or meat, peas, beans, lentils. If you do sedentary work or are putting on weight, go for Vegetable Salads, and go easy on fancy foods. If you take your food to work, remember that a well-chosen home-packed lunch *can* be more nourishing than a conventional hot meal. See below.

CHILDREN—A good school lunch needs:

- Two or more **SUBSTANTIAL** sandwiches—wholemeal for health, white bread for variety—with fillings of meat, egg, fish, liver, bacon or peas, beans or nuts or cheese alone, or with lettuce.
- One sweet sandwich of dried fruits (dates, raisins, etc.), banana, chopped apple, black currant jam.
- Something to chew after lunch—raw fruit or vegetables.
- Milk as a drink—school milk if available—if not, a bottle from home.

Mothers! Prepare school lunches at *home* so that you can be sure your child is getting the right kind of lunch.

FREE BOOKLET of suggestions for School Lunches. Write for a copy to the Department of Health, Wellington.

FOR A HEALTHIER NATION

The quantity of milk to feed will vary with the size of the calf; usually from 5 to 7 lb. is sufficient to commence with. These quantities are gradually increased up to about 2 gallons daily. It pays to feed whole milk from two to four weeks after birth. This gives the calf a good start in life. In changing from whole milk to any other supplementary food, the change-over should be very gradual.

It is important that regularity as to the quantity of food, time of feeding, and temperature of the liquid fed, should always remain the same. A calf in its natural state always receives the milk from its mother at the same temperature.

Bail Feeding

Feed the calves in separate tins, in bails, and allow them to stand in the bails for about ten minutes after feeding; this will prevent their sucking one another. A handful of crushed oats placed in the bucket after the liquid has been consumed is most beneficial to the calf and will further tend to prevent the objectionable habit of sucking. This system of feeding has much to commend it, as it tends to make calves more docile, and thereby assists in the breaking in when later on they become members of the milking herd.

Dry feeding, which is always a sound practice, may also be applied when calves are fed in bails. At an early age calves will begin to pick at some sweet hay or grass. This supplementary feeding at about three weeks is important, for, by providing the calves with some nourishing fibrous matter it will be satisfying their natural desire for this class of food, and so prevent them from eating foreign matter, such as rags, pieces of sacking, bark of trees, etc. When calves are observed chewing such matter, it should be clear

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to the owner that roughage of a nutritious nature is required for the well-being of the calf. The calf being a ruminant—cud-chewing animal—the chewing of the cud is essential to its good health; good, sweet, leafy clover or meadow hay will provide all that is required in this direction.

The Pastures

The calf paddocks should have a sunny aspect—the early morning sun contributes very largely to the health of all animal life. Where a calf paddock is in use over a number of years it tends to become foul; periodic change to a fresh paddock is desirable. Shelter from prevailing winds, and also shelter from the midday sun should the animals desire it, is equally important.

The pastures should be composed of mixed grasses, with cocksfoot, clovers and prairie grass predominating. Such pastures should receive a heavy dressing of lime once yearly. Drainage from piggeries, cowsheds and houses must not on any account be allowed in the calf paddock. Clean water is essential, and the provision of a balanced mineral lick is recommended.

When calves are weaned, and the danger of sucking the cows is passed, allow them to graze over as large an area as possible. This provides the calves with exercise and access to a greater variation of herbage which tends to protect them from parasitic invasion. When lung worm and stomach worm are once established, the mortality is usually high. Prevention is always better than cure!

Wean Gradually

One of the most important phases of calf rearing is the weaning period, and strange to relate it is one which very often is given the least attention.

Wean the calf gradually. The longer the weaning process the better the calf.

The bus-fed calf is a good example of how weaning should be carried out.

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It will be noted that in nature's state, as the milk decreases, so does the consumption of grass increase. This is the weaning process to perfection. Keep the calves going all the time and avoid a setback. Never allow them to lose their "calf flesh," which, if maintained for the first 18 months without a setback, assures the constitution of the future dairy cow.

Kindness Essential

In conclusion, it may be said that calf rearing is a matter of applying the principles of sound animal husbandry, and the practice of this art in a commonsense manner. There is no magic by which perfect health of the animal can be guaranteed. The art of animal management comprehends much, and to make a success of it there must be complete understanding

between the person handling the animal and the animal itself. Kindness must be the predominating factor to encourage confidence, for without it you cannot hope to get the best results. If you cannot be kind and patient do not waste your time trying to handle stock.

Phenothiazine

THE effectiveness of phenothiazine against the various types of internal parasites of livestock, together with details of the dosage rates, are contained in the **free** bulletin No. 189 obtainable from the Department of Agriculture at Auckland, Wellington, Christchurch and Dunedin.



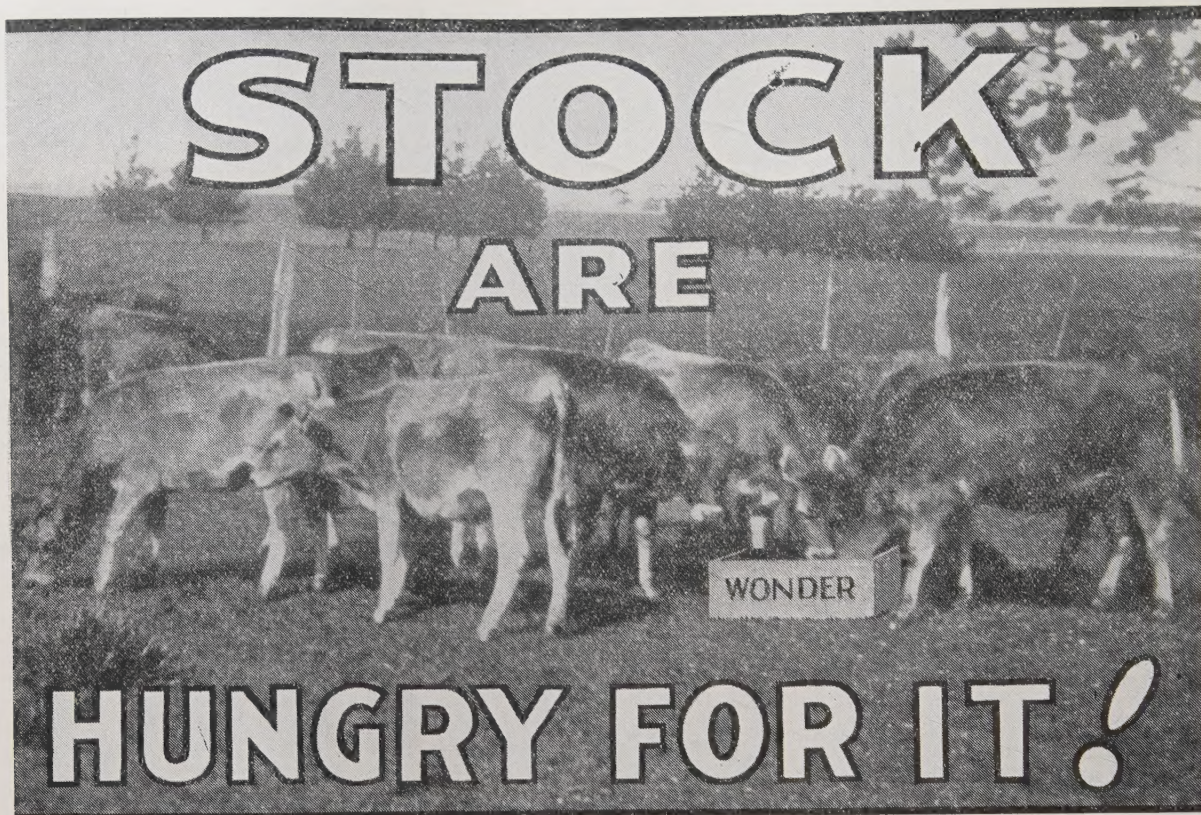
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Coming to
PROFIT**

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Mangolds and Carrots

by

The Fields Division

Grown under suitable conditions, the mangold is capable of producing a greater number of units of palatable feed than any other root crop. This alone would confer distinction, but the mangold possesses additional virtues which support its claim to be called the King of Fodder Crops.

A PART from its ability to produce high yields, the mangold is unique in its long keeping qualities, and it is not uncommon to find roots left over from the previous season still good and sound at the time when the new crop is being sown, a factor of considerable importance from the viewpoint of late winter and spring feeding. The facts that the mangold is highly immune to disease, is practically free from insect attack and resists drought better than any other root crop, give it still further claims for consideration as a regular farm crop.

Varieties

Mangolds are commonly classified into four groups according to their shape and colour: longs, intermediates, tankards and globes. In general, the long varieties are heavy yielders and are best suited for deep, heavy loams. Intermediates succeed on a wider range of soil conditions than long varieties, but are lower in yield on good mangold soils. Tankards have a high reputation for feeding value, but are not noted for heavy yields. Globe varieties are well known for their high yields and their adaptability to a wider range of soil and climatic conditions. This type is generally preferred to any other on the medium and lighter, but fertile, soils. Taken all over, the two most popular varieties are the Long Red and the Yellow Globe.

Soil and Climate

Mangolds do best on deep, fertile loams. Good crops, however, can be successfully grown over a wide range of soils with adequate manuring. The mangold requires a mild climate with plenty of sunshine, and once it has become established it can stand up to drought better than to wet conditions.

Place in Rotation

Although mangolds are often grown between crops as a root break, the

crop is most usually grown after grass, when it is utilised as a useful method of spreading the cost of re-grassing the area. Being relatively immune to disease, successive crops can be profitably grown on the same area, particularly as the cultivation and manuring tend to keep the ground clean and in good heart. Since mangolds grow exceptionally well after grass however, and benefit considerably from the decaying turf, it is often more profitable—where inferior pasture land requires breaking up—to use the mangold as a payable between crop in the re-grassing programme.

Preparation of Land

Since the mangold is a deep-rooting plant, deep ploughing is an important factor in the growing of profitable crops. If the crop follows grass, it is advisable to plough early to allow time for the sod to rot, so that it may be thoroughly incorporated with the soil. In the South Island, the land is usually ploughed in the early winter, but in the North Island it is sometimes deferred till August or even later. The land may be skim ploughed, disced and later cross ploughed deep, and eventually worked up to a good tilth. Frequently, the land is simply deep ploughed and worked up to a good seed bed by repeated discing, harrowing and rolling.

Manurial Treatment

The mangold is a heavy yielder and must be correspondingly well fed if it

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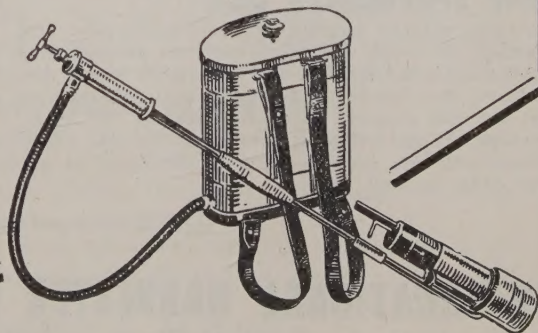
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is to attain its maximum development. Where the area is not too large, waste silage or well-rotted animal manure may be spread and ploughed in when preparing the ground, and this practice will greatly improve the prospect of a successful crop. Artificial fertilisers should also be applied at seed-ing time, the seed and fertilizer being generally applied in one operation.

As with other root crops, the most important constituent is phosphate, but on some soils the addition of potash may prove profitable. Since the soil has had plenty of time to warm up before the seed is sown, nitrogen is not often necessary where the land follows grass. A complete fertilizer is commonly used, however, where the crop is grown after a cereal. Since the mangold was originally a coastal growing plant, it often responds well to salt, and it has long been a common practice to apply from 3-5 cwt of agricultural salt, or alternatively about 5 cwt. of kainit, which contains about 50 per cent. of salt. This is generally applied separately from the other fertilizer some time before the seed is sown.

Under existing conditions it may be necessary to rely entirely on phosphates, as potash and nitrogenous fertilizers are in very short supply.



A heavy mangold crop.

Many experienced growers prefer to use part of the phosphate in a fairly quick-acting form, and in the past super has almost invariably been the main component of the mixture used.

Super or serpentine super—which ever is available—used alone, or with an equal quantity of bonedust or blood and bone, can be used with complete confidence. Normally, from

THEY'VE GOT TO SEE ANOTHER SEASON THROUGH

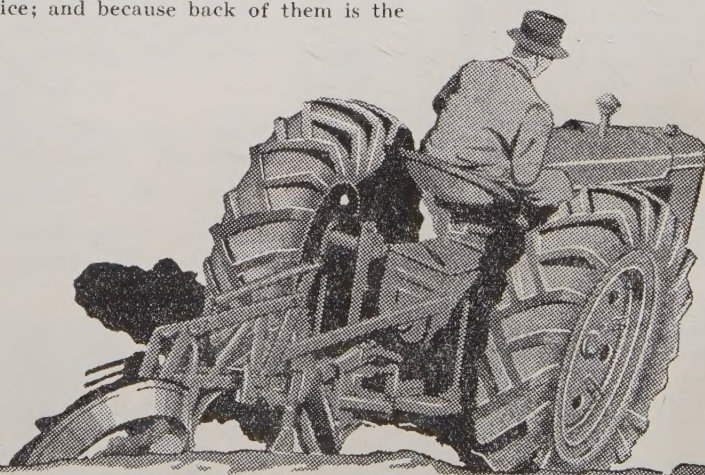
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4 to 5 cwt. per acre of phosphate was commonly applied, but on most farms such dressings will be out of the question at present. The allocation of $1\frac{1}{2}$ cwt (in terms of super), however, can be relied upon to provide quite satisfactory crops on reasonably good land, and it may be possible for some farmers to augment this by borrowing from their topdressing allocation or from a reserve store. While it is unfortunately true that there is no substitute for phosphate, it is equally true that thorough and careful cultivation can do much to mitigate the effects of any fertilizer shortage, and it can be asserted with confidence that a small area done well is likely to give a more profitable return than a larger area which has been indifferently cultivated.

Sowing

The crop is usually sown during October and November at the rate of 5-6 lb of seed per acre, the seed being covered from $\frac{1}{2}$ in. to 1 in. deep. The "seed" of the mangold is really a multiple fruit or capsule, and may contain from two to four seeds. Germination percentages, however, are based on the number of germinating capsules so that while more than 100 plants may be obtained from 100 capsules, the percentage germination can never exceed 100 per cent. An average line of seed will have a germination of 70 per cent. or so.

Sulphuric Acid Treatment of Seed

In districts liable to dry spring weather, and particularly where mangolds are grown on clay soils which dry out quickly, germination is often faulty and very slow, and the strike patchy. The treatment of the seed with sulphuric acid has proved effective in getting satisfactory germination under these conditions, and could also well be adopted where the slow germination of the seed allows weeds to establish strongly before inter-cultivation can commence. The treatment is as follows:—

1. Soak the seed for ten minutes in sulphuric acid (specific gravity 1.72) using sufficient acid to wet the seed thoroughly. (Note.—Normal sulphuric acid has a specific gravity of 1.84 and to reduce this to 1.72 one part by volume of water must be added to $6\frac{1}{2}$ parts by volume of normal acid.) About 1 lb. of acid is required for each 1 lb. of seed. Wooden or enamel vessels should be used.

2. Allow the seed to drain for 15 minutes, then wash thoroughly for 30 minutes in running water, and follow by washing the seed for a further 15 minutes in three changes of water to which ground limestone has been added. (A handful of lime to 4 gallons of water.)

The sulphuric acid eats away the outer hard coat of the seed, so that

moisture in the soil penetrates the seed much more readily and germination is hastened.

Apart from small areas which may be dibbled in or sown with a hand machine, field crops are usually sown either with a combined ridger and sower or with an ordinary grain drill on the flat. Where the ridger is used, the rows are well defined, and the crop can be horse-hoed to check weed growth before the mangold plants appear. Furthermore, during early horse-hoeing the soil is brought to the hollowed centre away from the young mangold plants, thus avoiding any soil smothering. On some soils it is common to roll the ridges immediately after sowing, particularly if the seed bed is dry, as this assists moisture to rise from below and helps to promote germination. Some discretion in the use of the roller is advisable, however, as there is a danger

that this may cause the surface to cake if rain followed by dry winds occurs before braiding.

Sowing on the flat is recommended on light, clean land, and the flatter the land surface lies, the greater will be its drought-resisting powers. The chief drawback of this method is that the crop cannot be horse-hoed until the plants are visible in the rows, and should the germination be slow and the land weedy, the young plants are suppressed or choked out before establishment takes place.

The width of the drills may vary from 14 to 28 inches apart, depending on the variety, and whether the crop is to be horse-hoed or entirely hand-weeded after singling.

Subsequent Cultivation

Experienced growers attach considerable importance to inter-cultura-

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ENROL NOW

tion, and many advocate the periodical use of the horse hoe from the time the rows can first be distinguished until it can no longer be used without damage to the plants. Apart from destroying weeds, horse-hoeing aerates the soil and also assists in conserving soil moisture, all factors having an intimate bearing on the subsequent yield.

Thinning usually commences as soon as the plants are large enough to set out easily, and the work may be performed by hand if the area is small, or by hand hoe if fairly large. The plants are usually singled to 10 or 15 inches apart, leaving the most robust where practicable, and any weeds in the row are destroyed at the same time. After thinning, the crop requires little attention beyond a periodic horse-hoeing and an occasional hand-hoeing to destroy weeds. Where the crop is patchy, blanks may be filled by transplanting, choosing a time when the weather and soil conditions appear suitable. In transplanting, the best results are obtained when good big forward plants are used. Plants with roots as big as a pigeon's egg transplant better and suffer less check than where plants with no bulb development are used.

Transplanting

Mangolds transplant well, and this practice is commonly adopted in the Auckland Province, where the crop is often grown on dairy farms on the basic volcanic areas in rotation with potatoes. The mangold seed is sown in beds in September, and after the "second early" potato crop is dug in November, the land is ploughed and the mangolds are transplanted. The plants having bulbs about the size of a man's thumb are pressed into the edge of the newly turned furrow-slice and then covered by the next furrow-slice as ploughing proceeds. Globe varieties are used and the rows are made about 20 inches apart. When transplanted in this way very little intercultivation is required.

Mangolds are also grown after grass. The usual practice then is to skim-plough at the end of winter, plough deeply in November, which gives a thoroughly-worked seed bed, and plough again as the mangolds are planted in early December. Care is taken in planting to set the plants at about the same depth as they grew in the nursery beds, and after being covered by the freshly-turned furrow-slice, the ground is firmed round each plant by the planter's feet. A crop planted in this way in 20-inch rows requires no after-cultivation, and will yield from 40 to 50 tons per acre.

The transplanting method has certain obvious advantages over the ordinary method of sowing and thinning, but it cannot be safely relied on in districts where the rainfall is low or apt to be unreliable at planting time.



A good crop of mangolds in process of being harvested.

Harvesting

Mangolds generally take from eight to ten months to reach maturity. Before being fed to stock, they should be lifted and allowed to ripen for about two weeks. If fed direct while still growing they are very liable to cause losses in stock, and furthermore much of their feeding value is lost. A practical method of deciding whether or not a mangold is ripe is to pierce it with a pitchfork. If it releases readily, it may be considered ripe, but if it adheres to the prongs and is difficult to release it may be regarded as unripe.

The common practice is to allow the crop to reach maturity, then pull, twist off the tops and throw the roots from three rows into one. The crop is then left to ripen on the ground for two or three weeks, depending on the weather. Although it is usual to allow the bulk of the crop to ripen in the field, and then cart them direct to stock, a considerable portion is stored in heaps in the open, or under trees, for late winter and spring feeding. Where frosts are prevalent the heaps should be covered with a layer of straw to prevent frosting.

Where the crop is being pulled for storage, care should be taken not to bruise or damage the roots, as this impairs their keeping qualities. Where the roots are to be consumed direct, however, the chain harrows are sometimes used to lift the crop. No doubt this may cause some damage to the roots, but the saving in time and labour is considered by many farmers to more than compensate for this.

Utilising the Crop

Mangolds are relished by all classes of stock. The crop is grown mainly

for dairy cows, and from 40-50 lb. per day may be safely fed along with a ration of hay. The crop can also be fed with advantage to fattening bullocks, when this ration can be greatly increased. While mangolds provide excellent sheep feed, the fact that the crop cannot be folded and fed off like swedes greatly limits its use as sheep fodder. The mangold, used with a small ration of meat meal, is esteemed as a valuable food for pigs. It is particularly appreciated for wintering stores, its excellent keeping qualities rendering it particularly useful in the late winter and spring periods.

Crop Yields

As already mentioned, the mangold is renowned for its potential ability to produce an impressive yield of valuable fodder. In New Zealand, some phenomenal crops have been grown, many yielding over 100 tons per acre, the highest recorded—170 tons per acre—being grown on the farm of Mr. H. T. Paul, Okato, Taranaki. Such figures however are quite exceptional, and yields of 50-60 tons per acre would be considered good under ordinary field conditions.

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Growing Carrots For Fodder

The carrot has long enjoyed the reputation of being one of the most palatable and nutritious of all the root crops. That discriminating farmyard epicure, the pig, if given the choice, will desert all other roots in favour of carrots, and it must certainly be admitted that this animal knows what is good for it.



A good crop of White Belgian carrots.

UNLIKE the turnip which will often succeed over a wide range of soil and climatic conditions with a minimum of attention, the carrot is somewhat exacting in its choice both of soil and climate, and it also makes fairly extensive demands on labour. Although carrots have been grown successfully almost throughout New Zealand, the crop shows to the best advantage on deep, light, friable and fertile soils, the ideal soil being a deep sandy loam with good natural drainage, in which the roots can penetrate easily and develop to full size without objectionable "forking." Deep cultivation is regarded as an important factor in the growing of heavy crops, and if there is even the slightest pan, this should be broken up by sub-soiling. Heavy clay soils

or stony soils are quite unsuitable for the growing of field varieties.

Apart from requiring a somewhat specialised type of soil, carrots also prefer a mild climate with abundant sunshine during the growing period, and a dependable but not too generous rainfall.

Place in Rotation

As one of the worst enemies of the carrot is weed competition during the early stages of growth, it is a fairly common practice to take the crop after grass or following a clean fed-off crop of rape. Two crops of carrots may also be grown in succession. When taken after grass, it is sound practice to allow plenty of time for the sod to rot. Apart from its appreciable manurial value, experience has shown

that there is less tendency to produce forked roots where the turf has rotted down thoroughly and has been well incorporated with the soil.

If time permits, the ground may be skim-ploughed in late autumn or winter and again deep ploughed across the furrow in the spring. Failing this, the land may simply be deep ploughed and eventually worked up to a good seed bed by means of discs and harrows. Whichever method is adopted, the final objective should be to prepare a good, deep, finely-worked and well-consolidated seed bed. Since carrots are generally grown on the lighter soils, germination and establishment are apt to depend on the ability of moisture to rise from below. For this reason, surface consolidation is a matter of prime import-



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ance, and it will be found that the liberal use of the roller has a marked effect on the density and vigour of the crop. It will also be found that where the soil has been well rolled it is much easier to sow the seed at a uniform depth.

Manurial Treatment

Carrots respond well to artificial fertilizers, and in normal times it was common to apply mixed fertilizers at the rate of from 3 to 5 cwt. or more per acre. On the majority of soils the most important constituent is phosphate, and this usually forms the basis of the mixture. A small quantity of sulphate of potash was generally applied where potash was known to be deficient. Under present conditions, it may not be possible for the farmer to compound his ideal mixture, but since the area grown on most farms is usually small, it should not be difficult, if considered necessary, to supplement the quota of 2 cwt. of super equivalent provided, with a small quantity of fertilizer borrowed from the topdressing allocation for the farm. The exact form of the phosphates used is not a matter of great importance, and quite satisfactory results can be expected from a mixture, part of which consists of phosphate in a fairly quick-acting form. A mixture composed of equal parts of super or serpentine super, with bonedust or blood and bone, can be relied upon to give good results.

Varieties

Field carrots vary considerably in their shape, size, colour and habit of growth, and are usually classified as long, intermediate, or short varieties. The following are the varieties most commonly grown:—

Long varieties: Matchless White, White Belgian, and Matchless White Belgian.

Intermediates: Red Intermediate, Scarlet Intermediate, Magnum Bonum, Barriball, Sinclair's Champion, and Holmes Improved.

Shorts. Guerande or Oxheart.

In selecting a variety, account should be taken of the soil conditions and the purpose for which the crop is intended. Long varieties do best on deep, fertile soils, and are generally grown for cattle. Taken all over, these varieties are the most popular and the highest yielders, the Matchless White Belgian in particular being the most extensively grown variety in the country.



A clean crop of Guerande carrots. This is the 7th consecutive crop in this field.

Intermediate and short varieties are normally preferred for the shallower soils; the former are commonly used both for cattle or sheep, while the latter are used almost entirely for sheep. It is interesting to note that the Guerande carrot has won considerable popularity for sheep feeding. Owing to its short, stumpy shape, it readily yields ground under pressure, and on this account, unless sown too thickly, does not require thinning. It is common to see rows of this variety with the carrots four or five deep, each self-spaced and making satisfactory growth. Sheep folded on this variety can readily eat off the greater part of the roots, and the remainder can be easily turned up with a few strokes of the harrows.

Sowing

The crop is generally sown when the weather conditions are suitable during October or November in drills from 14 to 26 inches apart, according to the variety and the condition of the ground. Where weed competition is to be expected and the area grown is fairly large, sufficient room should be allowed to permit of intercultivation, as this greatly influences the yield of the crop.

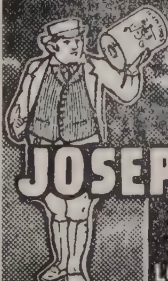
The rate of seeding varies according to the variety, the width of the rows, and the condition of the land, and may range from 1½ lb. per acre up to 4 lb. per acre. Care should be taken not to bury the seed too deep, and the best results may be expected when



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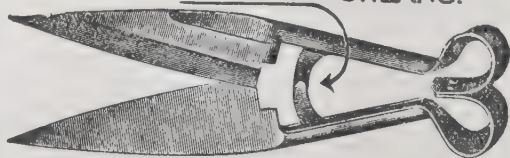
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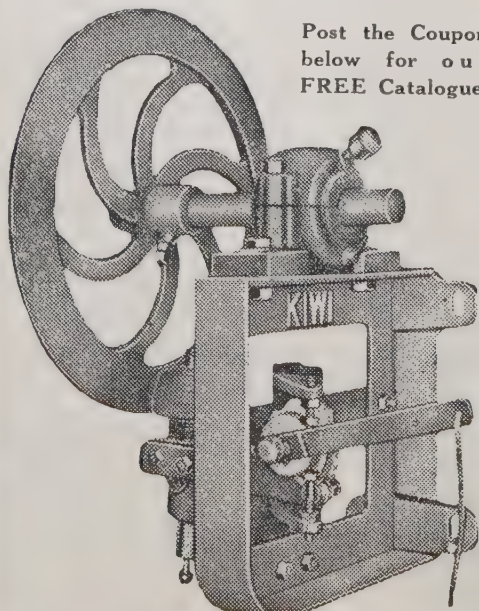
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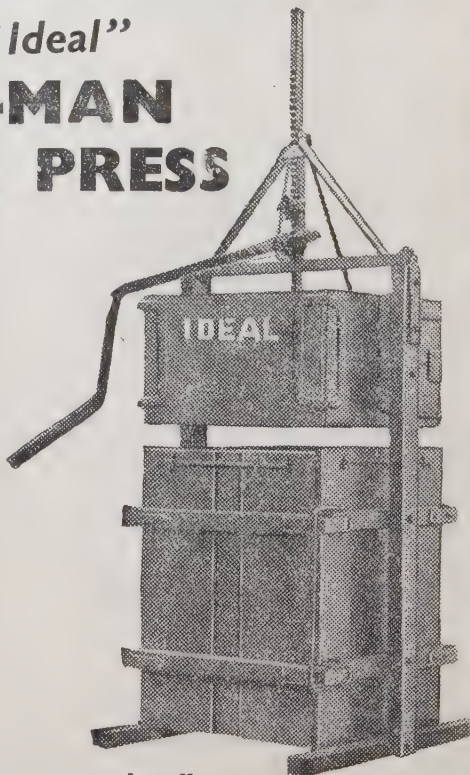
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the seed is covered from about a half-inch to one inch deep. Small areas are generally drilled in with a hand machine, but larger areas may be sown with a combined ridger and sower, or on the flat with an ordinary grain drill.

Mention has already been made of the detrimental effect of weed competition and the importance of a clean seed bed. In order to give the crop a flying start and to assist the young seedling plants to compete with weed growth, the seed is sometimes mixed with two or three times its weight of damp sand. This is usually done about a week before sowing, the mixture being turned daily to allow of aeration. The mixture is thoroughly mixed with the fertilizer and sown through the manure box of the drill.

Subsequent Cultivation

Experienced growers have long appreciated the importance of inter-cultivation, and horse-hoeing is usually commenced as soon as the rows can be distinguished, care being taken

at this stage to avoid soil moulding of the young plants. Thinning of the crop may begin immediately the young plants are large enough to set out as single plants. The plants are usually spaced at a distance of four to six inches, according to the variety and the fertility of the land. The thinning is usually performed by hand, the most vigorous plants being left where practicable, and all weeds cleaned out in the rows. After the thinning has been completed, the crop may be periodically horse-hoed to destroy weeds and conserve moisture, and if necessary may be given an occasional hand-weeding to destroy any weeds which have escaped the hoe.

Utilising the Crop

Carrots require from seven to eight months to reach maturity, and are generally lifted and fed to stock, or fed off direct on the field. The tops as well as the roots have an appreciable value as fodder and can safely be eaten by all classes of stock. Un-

der normal conditions from 25-35 lb. of roots can be fed to dairy cows and up to about 10 lb. per head to sheep.

As carrots do not keep well in the ground after reaching maturity, it is usual to have them consumed before serious deterioration can affect their feeding value. If desired, the crop can be stored like mangolds, selecting preferably a site having a cool, moist atmosphere. This is important, as, if allowed to dry out the roots shrivel up and lose weight badly.

Under favourable conditions carrots can produce heavy yields of highly nutritious and palatable fodder. On good land, crops of 40 tons per acre are not uncommon, and weights of 70 tons per acre have been claimed where conditions were exceptionally favourable. Considering that, apart from the actual weight of the crop, the health-promoting qualities of the carrot render it a particularly valuable fodder for all classes of stock, it will be appreciated that where conditions are suitable, the growing of even a small area can prove a very profitable venture.

Animal Research Station, Ruakura New Superintendent

THE appointment is announced of Dr. C. P. McMeekan, Ph.D. (Cantab.), B.Agr.Sc., to the position of Superintendent of the Animal Research Station, Ruakura.

Born in Otaki in 1908, Dr. McMeekan was educated at the Stratford Technical High School, Victoria University College and Massey Agricultural College, and graduated B. Agr.Sc. in 1931.

Dr. McMeekan joined the staff of Massey College as Assistant Lecturer in Dairy Husbandry in 1932, later being appointed Senior Lecturer, and was associated with the pig and dairy research of the College until 1936. Obtaining leave of absence, Dr. McMeekan proceeded to England, where he worked at the School of Agriculture, University of Cambridge, with Dr. John Hammond and in 1938 was awarded the degree of Doctor of Philosophy for his thesis on Growth and Development. While in England he served on several sub-committees of the Agricultural Research Council of Great Britain dealing with problems of pig production. In addition to extensive travelling in Britain, he visited Europe on several occasions examining farming and research methods in Denmark, Holland, Sweden and Ger-



many. In 1938-39, at the invitation of the Argentine Government Meat Board, and Corporation of Meat Producers, he visited the Argentine and other South American countries to examine fat lamb production in the Argentine with a view to quality improvement, and also to judge fat

lambs and bacon pigs at the Palermo Exhibition. During six months in South America he travelled extensively throughout Argentina, Uruguay and Chili, and delivered a series of lectures to the Sociedad Rural in Buenos Aires.

At the invitation of the American Society of Animal Production, Dr. McMeekan visited the United States of America and spent some time at the Universities of Missouri, Ames, Iowa and California, and delivered a series of lectures. On his return to New Zealand he rejoined the staff of Massey College and in 1940 was appointed Professor of Animal Husbandry at the Canterbury Agricultural College. In addition to his normal duties, Dr. McMeekan has been engaged in research work on wartime nutrition problems affecting New Zealand meat on behalf of the British Ministry of Food.

Dr. McMeekan is the author of over thirty scientific papers which have been published in British, American and New Zealand journals, as well as numerous technical and advisory publications. He has taken a prominent interest in various farmers' organisations concerned with improving the efficiency of animal production and has been a member of the New Zealand Herd Improvement Council of the Dairy Board since 1939 and President (1942-43) of the New Zealand Society of Animal Production.

Dr. McMeekan will take up his appointment at Ruakura about the middle of October.

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Perennial Weeds

Blackberry (*Rubus fruticosus*).—

This was introduced into the country in the very early days of colonisation, partly for sentimental reasons, and partly for utility purposes. Very soon, however, it overstepped its boundaries and became what is almost certainly one of the most difficult weeds to eradicate economically in the higher rainfall areas.

On ploughable land blackberry can be eradicated by continued cultivation. Even under these conditions, unless the ultimate value of the land is high, the cost of eradication may be more than the land itself is worth. Nevertheless, the fact that blackberry does not constitute a major problem on this type of country is in itself an indication that it can be eliminated economically.

It is on unploughable country that blackberry presents such a problem. The country in which it has become most aggressive is almost wholly the bush country that has been felled and grassed out, with logs and stumps still present. As a rule the logging up and stumping of this country cannot be carried out economically for twenty years or so after the bush has been felled. On country that is subject to blackberry invasion this twenty years gives ample time for the blackberry to become so firmly established that the removal of it together with the logs and stumps presents an almost impossible hurdle. If cost were no consideration blackberry would probably have vanished long before now. The primary consideration in any method of tackling its eradication must be the fact that the increase in the value of the land brought about by its eradication must necessarily be greater than the cost of the control measures adopted.

For many years blackberry control has been the subject of much investigation and experiment by both private individuals and State institutions. Up to the present time, however, no method has been found that can be economically put into practice over

— By —
S. H. SAXBY,
Instructor in Agriculture,
Dunedin.

large areas. Many different types of spray and spraying methods have been adopted, but all have failed to provide anything approaching complete control. Various fungi have also been tried. Whilst occasionally giving some measure of control none has been in any way efficient.

The question of control by insects has also been exhaustively investigated. Of the many insects tested only one showed real promise of success, but its liberation as a destroyer of blackberry would have been followed by severe damage to certain varieties of fruit trees. Consequently no insect parasites have been liberated.

Some seventeen years ago a very thorough investigation was made with regard to blackberry control. Apart from partially successful methods already in general use little advance was made.

Angora goats have been used by a number of farmers, and over a considerable period. Results indicate that, while not eradicating the blackberry altogether, goats will at least keep the pest in check. In utilising goats various practices are adopted, but basic-

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ally the principles worked on are very similar. The first step is the erection of sound goat proof fences in order to ensure that the goats are retained on the blocks being worked.

The area of blackberry is then burnt in the autumn. A second burn may be necessary to reduce the largest plants. The area is then sown out with a suitable seeds mixture. When the grass is sufficiently well advanced to feed off, the area is heavily stocked with sheep and goats. The relative numbers of these vary of course in relation to the degree of infestation of blackberry. Where the infestation is severe one goat to every sheep can be used. On country where the infestation is light the proportion can well be dropped to one goat to every twenty sheep. In general the goats concentrate on the blackberry while the sheep keep to the grass.

In the first stages the goats eat the blackberry practically to ground level. By doing this the lateral spread of the plants is effectively checked. Further grazing by the goats gradually weakens the plants to the extent that they may ultimately die.

In recent years heavy machinery has been tried out on blackberry land. The areas dealt with so far have not been large enough to permit any conclusions being drawn regarding its efficiency from a financial standpoint.

Up to the present time then only two effective methods of control can be recommended. Firstly, goats, and, secondly, the slasher, followed by the firestick.

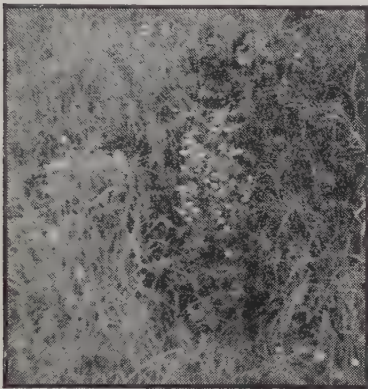
Broom (*Cytisus scoparius*).—A very common perennial weed on second-class country, riverbeds, and waste places throughout both islands. Although primarily introduced for the formation of hedges it has proved itself to be of comparatively little value for this purpose on account of its open nature. This results in it being unable to provide either good shelter or stock-proof hedges. In addition to these features broom is difficult to trim on account of its very springy stems. Various methods have been adopted in the eradication of broom, all of which are effective. The choice of methods will of course depend on three main factors, viz., cost, materials available, and the subsequent use of the land. Hand grubbing is quite satisfactory, but is expensive and laborious. Rolling with a heavy roller and burning when dry is also effective on suitable country preparatory to ploughing.

Where available very heavy tractor drawn swamp ploughs also make a good thorough job of turning the broom right under. Where this is done several annual crops should be grown in order to permit the broom to rot and the ground to consolidate before sowing down to grass again. Moderately tall broom may also be dealt with quite successfully with the rotary hoe.

Afforestation is often a suitable solution on unploughable hill country. Not infrequently one sees ploughable country on which considerable sums of money have been spent in clearing, rapidly reverting to broom again. This is nothing more nor less than sheer waste of money resulting from gross mismanagement.

Buttercup (*Ranunculus spp.*).—There are several different species of buttercup in New Zealand, but although varying considerably in habit they are of very similar agricultural significance.

All the common buttercups are plants of wet conditions, and are consequently of most significance in low-lying and wet pastures. In cereal crops they are of little or no significance. Some of the creeping varieties are troublesome in wet seasons when growing in competition with root crops. This is



Buttercups are essentially plants of wet, poorly drained situations on both plains and hillsides.

especially noticeable when the root crop is sown on ground ploughed late out of lea. Under these conditions there is frequently insufficient time to allow for satisfactory working of the ground to kill all the buttercup. This results in the plants reviving and entering into competition with the sown crop. On buttercup infested country early and deep ploughing is, therefore, advisable.

In pastures, buttercups are most common on poorly-drained country that is badly poached in the winter. In addition, buttercups rapidly gain entry into swards when they open up owing to the sown grasses dying out.

On low-lying fertile country just as much care should be taken in selecting the seeds mixture, and its subsequent utilisation, as is taken in the case of second-class country. Quite often relatively poor seed is sown on good country in the belief that even if the sown grasses do not thrive something else will grow in their place. That something else will grow in their place is doubtless quite correct, but the plants that will come in are

usually low-producing grasses and weeds, one of the most common of which is buttercup.

On buttercup country complete reliance should not be placed on ryegrass and white clover. The sowing of grasses such as timothy and meadow foxtail should receive serious consideration. A mixture containing these as well as ryegrass will do much, not to eliminate the buttercup, but to prevent its ingress. Wherever possible certified strains of pasture plants should also be sown.

In a paddock that is badly infested with buttercup the best cure is the plough. Where buttercups are appearing and are showing signs of increasing, suitable manuring and lenient winter grazing in order to stimulate the grasses are the best remedy. Some of the buttercups are reputed to be poisonous, but stock, however, very rarely eat them.

Californian thistle (*Cirsium arvense*) is also called Canadian thistle and creeping thistle. This is the common field thistle of Europe, and is

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now common in most parts of this country.

It is a perennial plant that spreads rapidly in suitable soils by means of long underground roots that throw up stems at intervals. The male and female plants are separate entities, the

latter of course being the ones that produce the seed. Californian thistle produces seed quite freely, and contrary to a common belief the seed germinates readily.

Although Californian thistle is common throughout the country it is com-

monest and of most account on loose friable soils. Such soils enable its root system to spread easily and rapidly. In old pastures on tight soils Californian thistle is seldom serious. It is on loose, arable soils that this thistle is most troublesome. Under these conditions the plant is virtually encouraged to grow and spread rapidly as the repeated cultivation not only keeps the soil in a loose condition, but also spreads the creeping underground parts over a wider and wider area.

Climatic conditions play only a very small part in limiting the distribution of Californian thistle. On account of its underground runners it is able to store a considerable amount of plant food and moisture to tide it over dry periods. Consequently this thistle is very widespread, and is found under practically all climatic conditions ranging from the arid districts of Central Otago to the high rainfall areas of the north.

When Californian thistle becomes really serious on arable land the only economic method of eradication is by fallowing. The fallow should, of course, consist of very frequent cultivations in order to force the plants to continually throw up fresh shoots. This self-exhaustion coupled with the continued drying out of the plants will ultimately reduce the thistle to a negligible amount.

In pastures the control of Californian thistles by means of mowing has met with a very varied measure of success. Several mowings throughout the summer will do much to weaken the thistle. One mowing will have little or no effect. This is because one of the functions of the stems that arise from the underground runners is to furnish these runners during the summer growing period with an ample reserve of plant food. Several cuttings not only prevent this reserve of food from reaching the runners but also deplete the runners themselves of the food that they have already stored up.

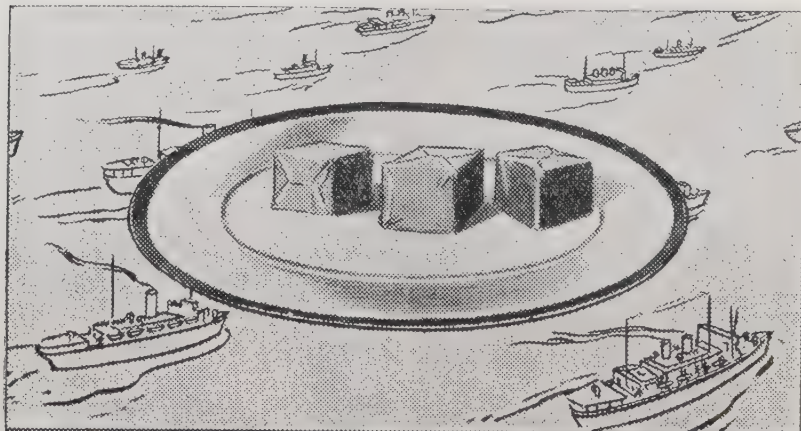
Small areas of Californian thistles can be eradicated by spraying the plants in the autumn with a 5 per cent. solution of sodium chlorate. It is advisable to cut the plants back before the poison is applied.

In lucerne growing districts it has been found that the growing of this on infested land will eliminate the Californian thistle entirely. This is due partly to the smothering nature of the lucerne, and partly to the fact that the lucerne, including the thistle, is cut three or more times during the year. This method is so successful very largely on account of the fact that the cutting of the thistle is merely an incidental operation in the cutting of the lucerne, rather than a special operation of cutting the thistle alone as is the case in pastures and which may easily be neglected.

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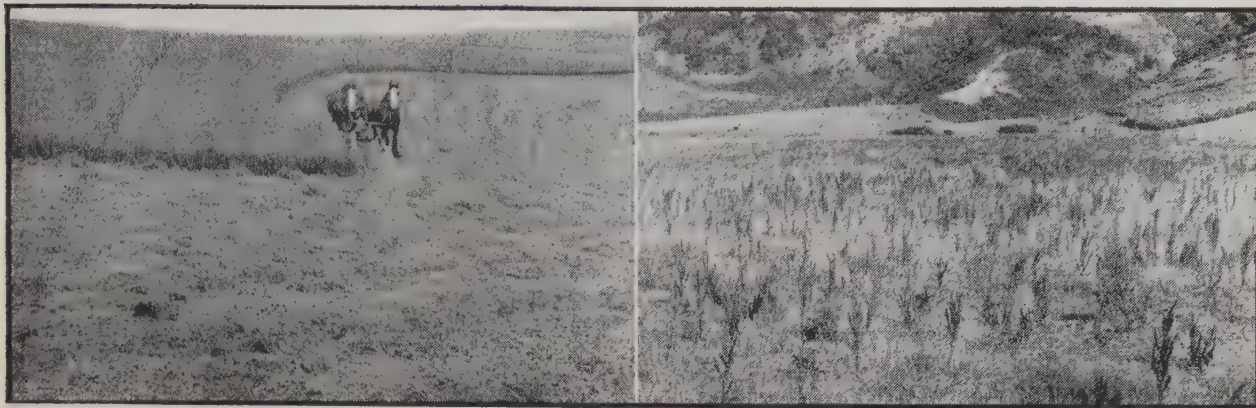
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OF NEW ZEALAND—FOR NEW ZEALAND





Left.—In districts where it will thrive lucerne will control Californian thistle in a very effective manner. Right.—Docks are most troublesome in pastures that are used for dairying purposes only. Under sheep grazing docks are of minor significance.

Catsear (*Hypochoeris radicata*).—This is frequently and wrongly referred to as cape-weed and even sometimes as dandelion. It is a perennial yellow-flowered tap-rooted plant with toothed and somewhat hairy leaves all of which come from the crown of the plant. The leaves form a rosette which presses so close to the ground that on plastic soils a very distinct impression is left. The flowering stems are branched and are devoid of leaves. Catsear is probably one of the most common of all the plants introduced into New Zealand. It has established itself on an extremely wide range of soils but is particularly abundant in old pastures overlying clay soils and on much of the low tussock country.

Catsear is one of a number of plants that can be regarded as a weed under some circumstances, and a useful plant under others. On first or second class ploughable country catsear is certainly a weed plant as its presence results in a financial loss to the farmer. This is because it is taking up ground that could well be utilised by higher producing plants. On the other hand catsear in tussock country is unquestionably of appreciable value, as there it is one of a group of plants that are providing a worth-while contribution to the total herbage and ground cover. This herbage is on the whole made up of low-producing plants relative to which the production from catsear is not low. Consequently the presence of catsear on this country should be appreciated rather than frowned upon.

Sheep are very fond of it, so much so, that when the stock concentration is at all heavy the catsear is liable to be eaten out to a considerable extent.

Daisy (*Bellis perennis*).—This is an extremely common and widely distributed perennial weed which spreads by means of both seeds and short runners. Daisy is essentially a pasture weed, as, on account of its relatively slow growth, it cannot compete suc-

cessfully with annual crops sown on well-prepared ground.

In general, daisy is most common in damp pastures overlying clay subsoils. On account of its close growing habit and its aggressive nature it frequently becomes almost the dominant plant. The ingress of daisies into pastures is still another illustration of the opportunity taken by a plant to occupy bare spaces when these occur. Very frequently daisies are of little significance until the sown pasture species commence to die out.

For example, a pasture sown with ordinary ryegrass, cocksfoot and dogstail as the main species, is for the first two years or so chiefly ryegrass. The ryegrass then starts to die out and the ground that is left vacant is occupied with any plant that happens to be available to take its place. On suitable country daisies fill in very rapidly with the result that the ultimate grass composition of the sward is very largely daisies, dogstail and some cocksfoot. Heavy winter grazing and poaching of weak swards both tend to create conditions suitable for the spread of daisies.

As prevention is better than cure, however, the control of daisy should really start by rendering conditions unsuitable to its establishment. Drainage, the raising of the soil fertility with lime and phosphate, and the sowing of suitable grasses and clovers will all contribute towards the prevention of the ingress and spread of daisies.

It is on second class, damp, unploughable ground that daisies present the greatest problem. Light grazing by allowing the grasses and clovers to overgrow and smother the low growing daisy plants will do much to act as a check. But if the daisies preponderate in the sward, or if the grasses and clovers are not able to make vigorous growth, then such light grazing will do little to improve the position.

Dock (*Rumex* spp).—There are several species of dock, the commonest of which is the broad leaved dock (*R. obtusifolius*). Docks are most troublesome on heavy dairying land or on land that is rich in nitrogen. Consequently they are particularly common in the corners of holding paddocks, stock yards and rich grazing pastures. They also become very aggressive in paddocks that are repeatedly cut for hay. Docks are deep-rooted, hardy perennial plants growing up to a height of 3 feet or so. Grubbing of mature plants in pasture land is of little value unless the plant is cut well below the crown. When cut at or near the ground level fresh shoots are sent up. In general docks are seldom troublesome in pastures grazed chiefly by sheep, particularly where the grazing is close and continuous. It is in lightly grazed cow pastures that docks usually become most troublesome.

Mowing docks in pastures prevents them from seeding but does little harm to the plant. It has been stated that applications of common salt will kill docks, and it is, therefore, probable that weed killers such as sodium chlorate will have a similar effect.

In arable crops docks are usually most troublesome in the first year when a dock infested pasture is broken up during the late winter. Even a portion of a dock root will survive and produce a large plant, and unless these are buried deeply or carted off they will grow again. Fallowing to kill dock roots is not very successful except when a prolonged dry spell is experienced.

In land that is known to be infested with dock seed several light cultivations before sowing will do much to kill seedlings and so reduce the weed population.

(To be continued).

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FOR FURTHER INFORMATION *apply:* **THE PRIMARY PRODUCTION COUNCIL;
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Solving The Farm Labour Problem

Greater prominence is now given to the development of the Women's Land Service, an organization that in Great Britain with 60,000 women farm workers has materially helped the farm labour problem and rendered an invaluable service to the nation. With an enthusiasm equal to their British cousins the girls of the New Zealand Women's Land Service are now ready to do their part in solving New Zealand's farm labour problem.

intolerant of the least suggestion of inconvenience or discomfort. Today it would be difficult indeed to separate one British land girl from another in respect to social standing or anything else. No one wants to, and no one tries to. They are intensely keen on their work, and justifiably proud of the record they have established.

Farmers' Appreciation

It is very largely through the Land Army's energy and enterprise that Britain's farm production has reached the highest level in history. British farmers generally are well aware of this, and have nothing but the highest praise for what the girls have accomplished.

It was not always thus. At the outset there were several deep-rooted



objections to be overcome. The average British farmer is strong on matters of custom and precedent. He did not like the idea of female labour and did not hesitate to say so. Nowadays he shows an abiding respect for the woman farm worker, and a keen appreciation of her efforts; and in divers ways there is evidence of a purposeful harmony between the Land Army and the entire farming community.

New Zealand's Effort

The day has arrived when the New Zealand Women's Land Service offers the friendly challenge that what has been undertaken on the other side of the world can be achieved just as successfully in this Dominion. There are reasonable grounds for that challenge. Without considering the position of girls born and bred on farms, who cheerfully and capably perform men's work as a matter of daily routine, it may be said that deep down in most New Zealand women there is something of the pioneer spirit, combined with a natural love of the open. All, of course, are not physically equipped, or otherwise adapted for farm work, but a large number are well suited in most respects that count.

In New Zealand the Service has gone far beyond the stage of mere experiment. At the present time approximately 800 girls are employed on various New Zealand farms, covering virtually every branch of farm work. A salient point is that, in practically every instance, a man has been released for the Armed Forces. The records of these womenfolk make pleasant reading indeed, and the num-

THE Women's Land Service presents a sound and constructive programme that has a two-fold object: a drive on an ambitious scale to recruit as many girls as possible that are considered suitable for farm work; a well-organised effort to enlist both the sympathy and help of farm owners who have not yet seriously considered the engagement of a land girl (or girls) as a solution of the ever-pressing labour problem. To those so placed, some rather convincing evidence is being offered that a very real opportunity does exist for meeting the emergency that has arisen.

British Women

Before dealing with the position in New Zealand, there is the pattern created by the Women's Land Army in Great Britain to offer as a shining example of achievement. During the last war a similar body was formed and developed. In the greater crisis created by the earlier days of the present conflict it was not difficult to pick up the threads of the old organisation. Many thousands of willing recruits came forward to relieve male farm workers for active service and, in a matter of a few weeks, the new army was operating extensively throughout the country.

At the present time there are approximately 60,000 women farm workers. Most of them commenced with no knowledge whatsoever of crops, stock, seasons, and other matters of farm routine. Many came from the more sequestered walks of life where people are inclined to be



ber of listed "failures" is so small that it hardly deserves the barest mention. In nearly all cases the farm owners concerned are every bit as enthusiastic as their British cousins who have had the better opportunity of proving the high value of female labour. Going over letters from sundry farmer-employers, one is impressed by such phrases as "extremely reliable," "most willing and useful," "keen at her work and very conscientious," "a great little worker and thoroughly efficient after a surprisingly short training period," and so on. Some mention the aptitude the girls display for the handling of animals, and owners of stud herds pay high tribute to their capabilities in this direction. Generally, it may be said that the girls have proved themselves "equal to a man-size job."

It is somewhat refreshing to emphasize that, in a major way, all this applies to "town bred" girls. A few years ago most of them would not have

dreamt of farming as a temporary career. Today it is extremely difficult to find one of them who wishes to return to her former life and associations. To account for this there is the natural enthusiasm behind the knowledge that she has taken over a vital war job; but another weighty consideration is an honest appreciation of the benefits of the healthiest life that offers.

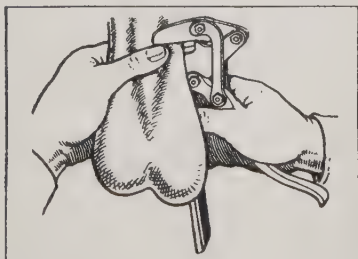
Complete Outfit

A member of the Land Service goes to her job well equipped for work under any conditions, from highly serviceable footwear to overalls, working shirts, storm coat, leggings, and sou-wester, and other items that combine to form a "wardrobe" of an approximate value of £40. This includes a smart and attractive dress uniform. It is an ideal outfit in every respect, and the best of its kind that has ever been issued.

Conditions of Employment

The conditions attached to the employment of a land girl are simple in the extreme. Dealing with the question of wages, if the employee's duties are classified as "general farm work" the weekly wage for the first six months for an inexperienced girl is £1 16s.; thereafter £2 3s. 6d. Where the employment is for dairy farm work the figures are £2 1s. and £2 8s. 6d. respectively. In either case, free board and lodging has to be provided, or an allowance of £1 weekly in lieu thereof. In respect of inexperienced girls placed under the conditions of the Women's Land Service, the employer will receive from the National Service Department a training subsidy of £1 per week for the first three months and 12s. 6d. per week for a further three months. During the training period it is the responsibility of the employer to ensure that the land girl receives the utmost benefit of his knowledge and experience of farming. Insurance under the Workers' Compensation Act (as for male farm workers) is compulsory. With a dairy farm employee, holidays are taken in accordance with the provisions of the Agricultural Workers Act, 1936, while the Agricultural Workers Extension Order covers the girl whose duties are concerned with sheep.

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VACCINATION

Against Contagious Abortion

— By —

J. F. FILMER,

Director, Animal Research Division,
Wellington.

IN SEPTEMBER, 1942, it was announced that the Department of Agriculture would make available a free vaccination service against contagious abortion. Eleven hundred and sixty dairy-farmers applied to have their calves vaccinated, and seventeen thousand eight hundred and eighty-two calves were vaccinated during the early months of this year. In addition a number of yearling heifers and some cows were vaccinated in very badly affected herds. Detailed records of these are not yet available, but it seems likely that they will bring the total for the first year to approximately twenty thousand.

The following table compiled from data supplied on the application forms shows the abortions in the herds applying for vaccination.

	Cows in the herds.	Abortions in 1942.
2 year olds	14,910	3831 (25.6%)
3 years and over	54,644	4983 (9.1%)
Totals	69,554	8814 (12.6%)

As might be expected, the incidence of abortion in these herds was much higher than the average for New Zealand, which is probably fairly accurately represented in figures given in the report of the New Zealand Dairy Board for the 1940-41 season. In the herds surveyed by the Dairy Board the incidence of abortion was shown as 10 per cent. for 2-year-olds, 3.8 per cent. for 3 years and over, and 4.8 per cent. for all cows.

It is of course too early to assess the results of vaccination as the heifer calves vaccinated this year are only just being mated and the effectiveness of vaccination will not be apparent until the next calving season.

Information Required

The Department intends to make free vaccination available again this year, but shortage of staff and essential materials will not permit of the vaccination of an unlimited number of calves. First preference will be

given to herds in which calves were vaccinated this year. Owners of these herds should now fill in the printed form issued to them at the time of vaccination. This is in three sections. The section headed "Breeding Summary" should be filled in first by everyone. Where calves were vaccinated for the first time this year, all of the entries will of course be made under "Non-vaccinated." In the few herds where calves or older animals were vaccinated last season, and these have now calved, they should be shown in the column headed "Vaccinated."

Please fill in all details asked for in this section as it is important to discover the total effect of contagious abortion and how this is influenced by vaccination. If in each column the

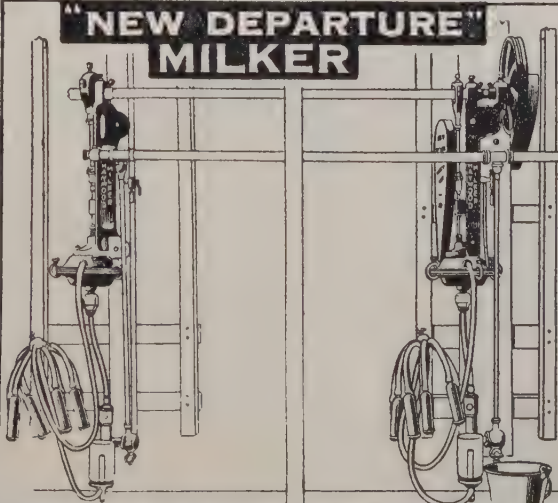
numbers shown as Abortions, Full time dead calves, Normal calves, and Empty, do not add up to the number shown as Cows mated, please add a note, e.g., one died, two sold, as the case may be.

Attention is drawn to the definition of abortion—any calf born under 8 months which fails to live. Any dead calf born after 8 months should be shown as a full-time dead calf. All calves which live should be shown as normal calves.

In the next section details of abortions are required only for vaccinated animals, and consequently these need not be filled in by owners who had calves vaccinated for the first time this year.

Applications

The third section is the application form for this year's calves. In filling in this, details of identification and date of birth should be shown for each calf. Last season owners collaborated very well in marking calves, only about 1 per cent. of those vaccinated being unidentified. A large proportion, however, did not supply details on the application form, and these had to be collected later by vaccinating officers. It would be much appreciated if this year all owners would fill in these details on the application form. If for any reason it is not possible to do this the age of the youngest calf must be stated, as



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it is undesirable to vaccinate calves under four months. If some cows are calving late, do not send in the form until all cows have calved. Attention to these details will save considerable clerical work and will also obviate the necessity for vaccinating-officers visiting herds twice, as happened sometimes last season. If the printed form has been lost a new one can be obtained from the nearest office of the Department of Agriculture.

New Applications

In addition to those herds in which calves were vaccinated last year, calves will be vaccinated in as many herds as possible where serious trouble is being experienced from abortion. Vaccination is not recommended in herds in which less than 5 per cent. of cows abort. All abortions are not due to contagious abortion, and vaccination will have no effect on abortions due to other causes. Owners who have not had calves vaccinated previously should apply on the form printed in this journal.

Applications should be addressed to the Director, Animal Research Division, Department of Agriculture, P.O. Box 3004, Wellington, and should be sent in as soon after the 1st November as possible. **The Department cannot guarantee to vaccinate calves for which applications are not received by the 1st December.** Members of Veterinary clubs which are arranging for their own veterinarians to perform vaccinations should send application forms to their clubs, which will forward them in due course. Application forms will not be acknowledged, but farmers will be notified by vaccinating officers of the date on which vaccination will be made. This will probably be in January or February, or, in late calving herds, in March.

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The More You Help, The Sooner We Win

Application for Vaccination of Calves Against Contagious Abortion

Name of Owner

Address

Cows in herds: 2-year-olds.....

3 years and over.....

Heifer Calves Born in 1943:

*(a) Bred on farm.....

*(b) Outside purchases.....

Number of Cases of Abortion:

1943—

Two-year-olds

Three years and over.....

Note: An abortion is defined as any calf born under 8 months which failed to live. Abortions should be recorded for the year in which the cow would normally have calved.

I hereby apply for vaccination of my heifer calves as shown above, and agree to provide annually details of abortion occurring in my herd and to report promptly abortions which occur in vaccinated animals, and, where possible, to supply specimens of calves aborted by vaccinated animals.

Signed..... Date.....

* Give individual numbers or other identification marks, and dates of birth on a separate sheet.

Grading of Pigs

Its Relation to the Losses Incurred from Farm to Consumer

— By —

H. M. PEIRSON,

Acting-Superintendent of the
Pig Industry, Livestock Division,
Wellington.

THE producer is paid for his pigs on a grade basis, covering weight, range and quality. Why, when pigs have been manufactured into pork and bacon are they not sold on this basis?

Losses From Live Weight to Carcase

In an endeavour to clarify the position, let us start at the beginning. It will be necessary first to direct attention to the investigations carried out by the Pig Recording clubs some years ago in respect to the loss incurred from live to dead weight of both porkers and baconers. It was shown from these investigations that porker losses from live to carcase weight ranged between 25 and 41 per cent., while in bacon pigs the loss ranged between 21 and 33 per cent.

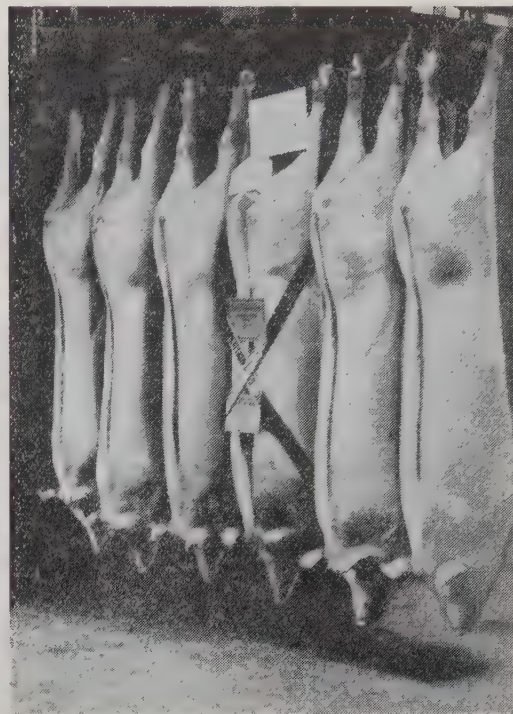
The operators and curers when purchasing pigs at saleyards or on a sty basis have to give consideration to this point, and get over the difficulty in estimating the carcase weight, by allowing a loss of 33 1/3 per cent. on porkers and 27 1/2 per cent. on baconers. As is to be expected, this loss gradually decreases as the pig increases in weight, i.e., a pig of 100lb live weight would lose approximately 34 per cent., while at 220lb the loss would probably not exceed 26 per cent. There is little doubt that this loss is directly associated with type, breed and strain, but more particularly with feeding and management. Sometimes when pigs are sold at hook weights the seller expresses dissatisfaction on receipt of the killing sheet, insofar that the pigs did not kill out as expected. The seller, not appreciating the point that the factors mentioned above could affect the difference between carcase weight of the live pig and the hook weight of the pig, may be under the impression that he has been victimised by the purchaser (operator or curer).

For many years farmers have been advised to weigh pigs before despatch (taking care to see that no feed or

water has been given for at least twelve hours before weighing), not so much as a check on what the killing sheet should show, but rather that he would be able to correct the factors associated with type, breed, strain, and management, and so assist him to produce pigs that would show the minimum percentage of loss at this primary stage.

The external characteristics indicate the desired conformation of carcase, but they are **only an indication** and are not conclusive evidence in them-

selves. There are, as has been shown, other factors to be considered. External conformation, for instance, bears more closely on the relation of secondary (side of bacon) than of primary offal to carcase weight, and it



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J.A.

is always possible for a pig of excellent conformation to show an undue proportion of offal and therefore too great a difference between live and dressed carcass weights.

As already mentioned, the loss between live weight at the time of slaughter and the dressed carcass weight varies according to the weight of the pig, the percentage of this loss being greater in that of light weight pigs.

TABULATION OF APPROXIMATE LOSS IN A 100 LB. PIG AND A 200 LB. PIG.

Live weight	100 lb.	200 lb.
Less primary offal—Liver, Lungs, Heart, Entrails, Blood	33 lb.	54 lb.
Dressed carcass weight	67 lb.	146 lb.

Grading Standards

It has been said that a boiled egg or a dessert apple may be served in a restaurant retaining its original grade markings. Grading in such cases may be carried through from the primary producer to the ultimate consumer, but when the egg is turned into an omelette or the apple into a pie, the chain is broken. The product has changed by manufacture. Thus, grading, so far as connecting producer and consumer is concerned, has definite limitations.

In the bacon factory every art of the industry is applied in the course of manufacture to turn out a uniform product from the raw material. Various methods of trimming and processing are resorted to insofar as the nature of the product will permit. Some pigs not having graded well as carcasses are of such a character that no art or skill on the part of the curer can make them into a first-class product.

When the pig passes from the farmer to the meat-works, and begins to go through the bacon-factory, it ceases to be a pig and becomes a carcass. In the course of time it changes to Wiltshire sides, bacon, and a variety of other products. Such processing entails costs, and leaves a quantity of by-products of comparatively low

value. Therefore, the pig that produces a high value product as bacon, with the least trimmings, is the most desirable.

Grade standards for pigs are most useful when constructed so as to give the producer of pigs an intelligible guide as to how he can supply to the exporter and the curer the material most suitable to meet the requirements of the consumer.

Losses From Carcass to

Edible Meats

The second phase is the losses occurring from carcass to the saleable product. In the case of pork, as the price now paid is on a "heads on" basis, there is a direct loss of 10 per cent. from the head. While some of this is recoverable, since the head represents mainly bone, little more than 25 per cent. of this can be retained as low-value edible meat, which is generally used in the manufacture of small-goods. With the bacon carcass, however, there is a much greater loss. In the conversion of carcass to Wiltshire sides, there is a direct loss of at least 13 per cent. This includes the head, feet and backbone, following which the process of preparing the Wiltshire sides for curing, by the removal of the leaf fat, tender-loin, kidneys, and kidney-fat, will entail the loss of not less than another 10 per cent. It is generally recognised by the trade that a further loss, by shrinkage, from the cure to the smoked product takes place.

From the dressed carcass to Wiltshire sides, suitable for curing, the position is as follows:—

Dressed carcass weight,		146 lb.
Head, tail, feet and backbone	First loss, 13 per cent.	
Leaf-fat, tender-loin, kidneys, kidney-fat, and trimmings		23 per cent., 32 lb.
Prepared Wiltshire sides (2) for curing		114 lb.
Shrinkage to smoked product, ready for retailer as 2 sides and 2 hams,	5 per cent.,	6 lb.
Smoked bacon,		108 lb.

It is considered by curers that 25 per cent. of a straight run of pigs are sold to the retailer as fat sides, and this is another reason why curers cannot sell bacon on the carcass grade basis. A portion of all curers' losses is recoverable. Heads, back-bones, trotters, kidneys, tender-loin, flare fat, and trimmings are converted into lard, small-goods, and sausage meat, and would probably not amount to more than 20 per cent. of the total losses mentioned. No allowance is made for the primary offals, hearts, livers, etc., the payment for which is allowed for in the killing charges, and which become the property of the killing works concerned.

Apart from these manufacturing losses, retailers estimate that there is a further loss in cutting smoked sides to rashers, and claim this to be approximately 3 per cent. of the side. This 3 per cent., which represents trimmings, waste cuts, rib bones, and shanks, is not loss in the true sense; nevertheless, it has to be sold at a considerable discount.

Retail Prices

In general practice, the price of bacon to the consumer varies according to the cut. Rashers are usually sold at 1/6 per lb., whole shoulders at 9d. to 11d., hams from 1/4 to 1/5, and belly rashers and shoulder rashers at 1/3 to 1/4 per lb. Back rashers, the prime cut, realise 1/8 per lb. Boned long rolls, which include the boned shoulders, are purchased by retailers at a premium of 2d. per lb. over sides, while fat sides are purchased at 1d. per lb. discount. The overall price of bacon to consumers is generally presumed to be 1/6 per lb., but since different cuts and pieces are sold at varying prices, the average price would not exceed 1/4 per lb.

Choppers, stags, and heavy-weight baconers are used mainly in the manufacture of sausage-meat, and the loss from live to carcass weight of this class of pig is about 26 per cent. In converting the carcass to meat for sausages, there is a further loss of 33 1-3 per cent. A chopper carcass of 240 lb., which is the average weight, would yield about 160 lb. of meat

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suitable for this trade, and the cost to the butcher or curer for this meat will be 50 per cent. above that paid for the carcase.

What the Bacon-Curer Finds In a Pig

The position held by the bacon-curer, between the farmer, producer, and the consumer, has a dual aspect, which is only partly understood even by those immediately inside the ranks of the producers. The farmer, in normal times, may consider the curer to be the last link in the chain which affects the price of his pigs. The housewife may regard him as the first source of meat. The general public may assume he is the middle-man.

The bacon-curer is a manufacturer. He is more than a middle-man, whose only function is to distribute goods,

because the curer takes a product from the farmer, which in its live state is inedible, and converts it by various manufacturing processes into edible meats or other products which may be utilised for many purposes. The changes made in the raw material by the manufacturer are as complex, if not as technical, as converting raw wool into cloth. Yet in normal times the consumer determines the value of the farmer's live-stock, and the farmer controls the quality and quantity of the consumer's meat.

Most manufacturing processes start with an assembling of different raw materials, which are later united into a finished product. The meat-curer's manufacturing process begins with the opposite of assembling. He buys the raw material, as it were, in one package, when he pays for the live

animal. He then proceeds to unpack it, and manufactures the numerous assortments into edible and inedible parts. The carcases are divided and subdivided, and undergo different processes to fit them for the different markets on which they must be sold.

It may be stated that the exporter and the bacon-curer can only find in the pig what the producer has put into that pig, by breeding and feeding. Pigs like other living things have individuality. Some are firm and hard, with splendid body proportions, while others are soft and flabby, over-developed, or under-developed in some parts of the carcase. Good hams and bacon, and other pork products, cannot be manufactured out of poor pigs, and grading standards for carcases do not always, or alone, provide the best pigs for bacon production.

35% more of the farm topdressed



with ration available

Dairy Conference supports use of Serpentine Super

The June issue of the "Exporter" reports that the Dairy Conference supported the attitude of the Department of Agriculture on the use of Serpentine-super. In the August, 1942, Journal of Agriculture, page 67, the Department advised the use of Serpentine-super on the strength of tests which showed that 35% more of the farm could be topdressed with the ration available.

Enthusiastic owners support use of "TRIUMPH" Topdresser

Mr Rodney Coates, Matakohu, North Auckland, says:—

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Mr W. Young, of Otahuti R.D., says:—

"... used all sorts of manures and lime, including salt from tannery with lot of fat and hair in it."

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Conservation of Farm Machinery



Care of the Mowing Machine

A FEW adjustments and repairs to the mowing machine at the right time will add years to its usefulness. Matters essential to its efficient operation are alignment of the cutter bar, register of the knife and shear, or correct seating and condition of the knife to enable it to cut or shear satisfactorily.

Alignment of Cutter Bar

The outer end of the cutter bar should be set ahead of the inner end in order to keep the knife and pitman running in a straight line. This is referred to as "lead," and lead is necessary to compensate for pressure brought to bear on the cutter bar when the machine is in operation. On a five-foot bar this lead should be $1\frac{1}{2}$ inches, on a six-foot bar $1\frac{3}{4}$ inches, and on a seven-foot bar 2 inches. If there is no "lead" the pitman and knife work at an angle and this frequently causes the knife to break at the head. To check the lead have the machine on a level floor with the pole raised to the correct working height by placing a support about 32 inches high

under the front end of it. Tie a cord around a spoke of the left-hand wheel from the outside, then bring the cord across the face of both wheels, along the cutter bar, and fasten it securely beyond the outer shoe. The cord should be the same distance from the floor at both ends and just touching the face of the right-hand wheel. Pull the end of the cutter bar back as far as the wear will permit and measure the distance from the cord to the back edge of the knife at both inner and outer ends of the bar.

The back of the knife at the outer end should be the required distance farther from the string than it is at the inner end. The method of adjustment for re-establishment of lead in any particular make of mower will be found in the manufacturer's manual. Replacement of worn yoke and hinge pins may be necessary, or again, adjustment of drag and push bars on machines that lend themselves to this method of alignment may be all that is required to bring about desired results.

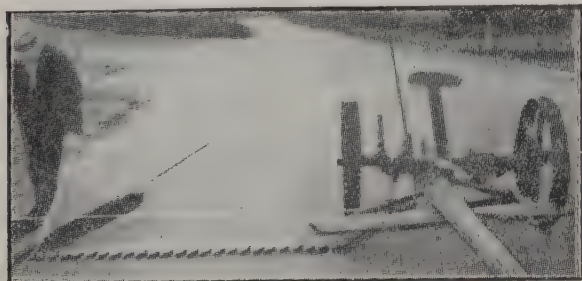
Sometimes the lead may be regained by carefully shimming up the worn hinge pin holes with tin.

Register

The register of the knife means the relation between the fingers and the knife on the extreme inner and outer ends of the stroke. When the knife is in or out as far as it will go

the points of the sections should be in the centre of the fingers. If the length of the pitman or the pitman straps has been changed the knife will be out of register. In such circumstances the necessity for readjustments will be obvious. Incorrect register of the knife means incomplete cutting in one or other direction of the stroke, increased draft, side draft, and in extreme cases knife-head breakages.

The knife may be made to register correctly by adjusting the head of the pitman or in some cases by lengthening or shortening both the drag and push bars.



Illustrating position of string for measuring amount of lead.

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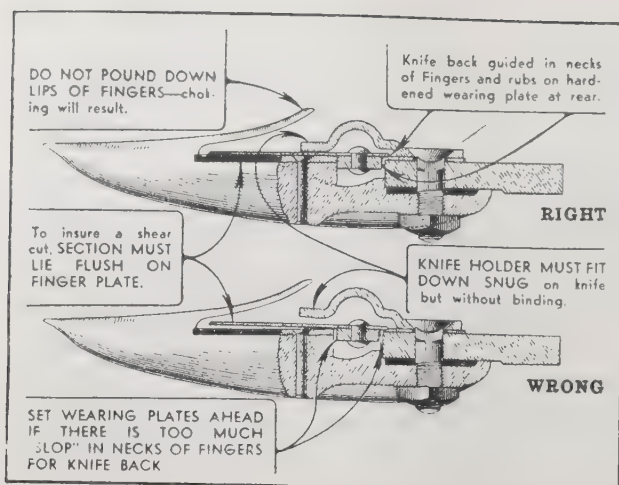
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Right and wrong adjustment of knife to ledger plate.

Shear

The wearing plate and the knife holder on a mower act the same as the bolt or screw in a pair of scissors. When the knife or ledger plates are dull or the knife holders and wearing plates are worn the machine will not cut cleanly. When ledger plates are worn so that serrated edges have become smooth they should be replaced. Ledger plates may be removed by punching out the rivets that secure

the edge of an iron block or anvil and striking the back of the section a sharp blow with a hammer. This shears the rivets off without bending the knife back. When putting on new sections be sure the rivets are tight. When knife holders become worn or bent up it is necessary to replace or adjust them.

Adjustments may be made by removing the knife and tapping the holders down till the knife when in

them to the fingers. When the wearing plates under the knife holders become worn the back of the knife drops down and the front comes up. The knife will not then ride flat on the ledger plates, and this indicates that the wearing plates should be replaced. Old knife sections cracked, broken, or worn down can be readily removed by placing the back of the knife with sections pointing downwards along

position lies flat upon the ledger plates but with sufficient clearance to work freely. Fingers should also be aligned so that each section of the knife lies flat on the ledger plate. To this end, it is better to look at each ledger plate to see that the knife is seated correctly upon it than to look along the ends of the fingers, as these do not necessarily indicate the true position insofar as it affects the seating of the knife. Fingers out of alignment may be tapped into position with a hammer, using the hammer on the thick part of the finger to avoid breakages.

If a cutter bar has the correct lead, knife-register, and a good shearing action it should do satisfactory work if the rest of the machine is in good enough order to drive it.

Bearings

In replacing countershaft and crankshaft bearings the following method may be adopted. To change the countershaft bearing remove the countershaft bevel gear, loosen set screws, if any, on the outside of the countershaft bearings, and drive out the bearings with a heavy punch or short shaft. When driving in the new bearing use a piece of hard wood as a buffer. If the new bearing fits too tightly file off to permit proper seating of the bearing.

The pinion gear and crankshaft must be removed before the crankshaft

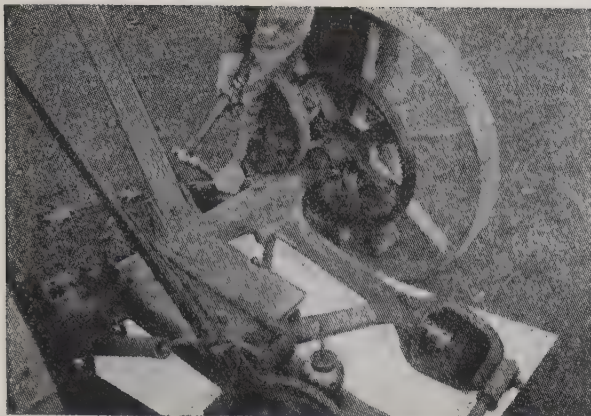
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Left: Removing lower bearing. Right: Replacing lower crankshaft bearing. Fly-wheel removed.

bearing can be replaced. The pinion gear may be removed by inserting a shaft through the spokes of the bevel gear, then with another shaft pry up on the wrist pin. Most pinion gears have a right-hand thread.

It is sometimes necessary to remove the flywheel from the shaft before the shaft can be taken from the frame. To remove the flywheel place the end of a $\frac{3}{4}$ -inch shaft or heavy punch on the flywheel end of the crankshaft and drive the shaft through the wheel. Be sure the counter-shaft and gears are removed before attempting to do this.

To remove the old bearings insert a rod slightly smaller than the crankshaft and with a heavy hammer drive out the lower bearing, slip new bearing over the crankshaft, and insert in the frame. This guides the bearing and keeps it in line. In driving the bushing into the frame use a hard wood block as a buffer held against the flywheel, or crankshaft if the flywheel has been removed. Keep turning the shaft to ensure proper lining of the bearing. To remove the upper bearing insert the rod through the lower bearing and drive out in the same manner as when removing the lower bearing. To replace, insert

the crankshaft in the frame, slip the new bearing over it, and drive into place, using as previously mentioned a hard wood block for a buffer. Always replace the new bearings over the crankshaft. Do not remove both bearings at the same time. Keep turning the crankshaft while driving in the new bearing so as to ensure that it is lined in correctly.

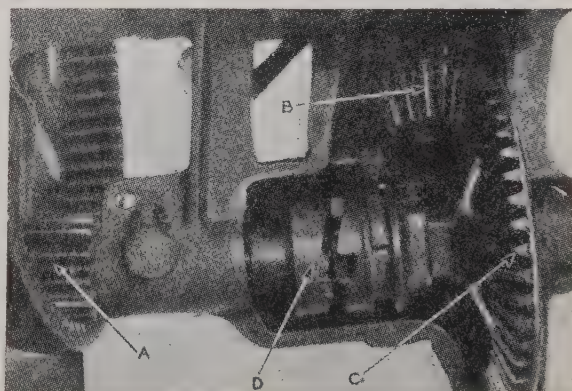
Gears

Pinion and bevel gears should be adjusted so that the teeth mesh full depth without binding. If they mesh too deeply or not deeply enough they will wear rapidly. There should be a slight clearance between these two gears. If the crankshaft has end play this may be taken up by placing a washer between the frame and the pinion gear. Because

meshing them tighter. Adjustment of this secures proper gear mesh. Noisy gears indicate they are meshed too deeply.

Lifting Levers and Springs

The lifting spring performs two duties. If properly adjusted it should be tight enough to prevent the inner



Gear assembly. A, spur gear; B, pinion gear; C, bevel ring gear; D, clutch.



Removing fly-wheel.

of the taper of the pinion this tends to mesh the gears deeper and also removes end play. If there is no end play on the crankshaft, and it is still desired to mesh the gears deeper, this may be achieved by placing steel washers between the frame and the spur gear. Some machines have a thrust nut on the counter-shaft which when tightened draws the bevel gear into the pinion gear thereby

shoe from riding too heavily upon the ground, thereby causing increased draft and side draft, and yet loose enough to allow the cutter bar to drop back readily to the ground when the machine passes over a stone or other obstruction. This spring also makes it easier for the operator to raise the knife bar with either hand or foot lever. The tilting lever is used to tilt the cutter bar either up or down.

Wrist Pin

After a few years' service the wrist pin becomes worn and oval in shape. To replace it remove the flywheel, file or chisel off the riveted end of the pin, and drive it out. In replacing the new pin be sure that the shoulder is seated properly on the flywheel all the way round. This ensures that the pin

is perpendicular to the flywheel. Unscrew the nut part way so as to prevent damaging the threads, turn the wheel up and place the nut end of the pin on an anvil or iron block. Cross cut the end of the pin with a cold chisel and then rivet until tight.

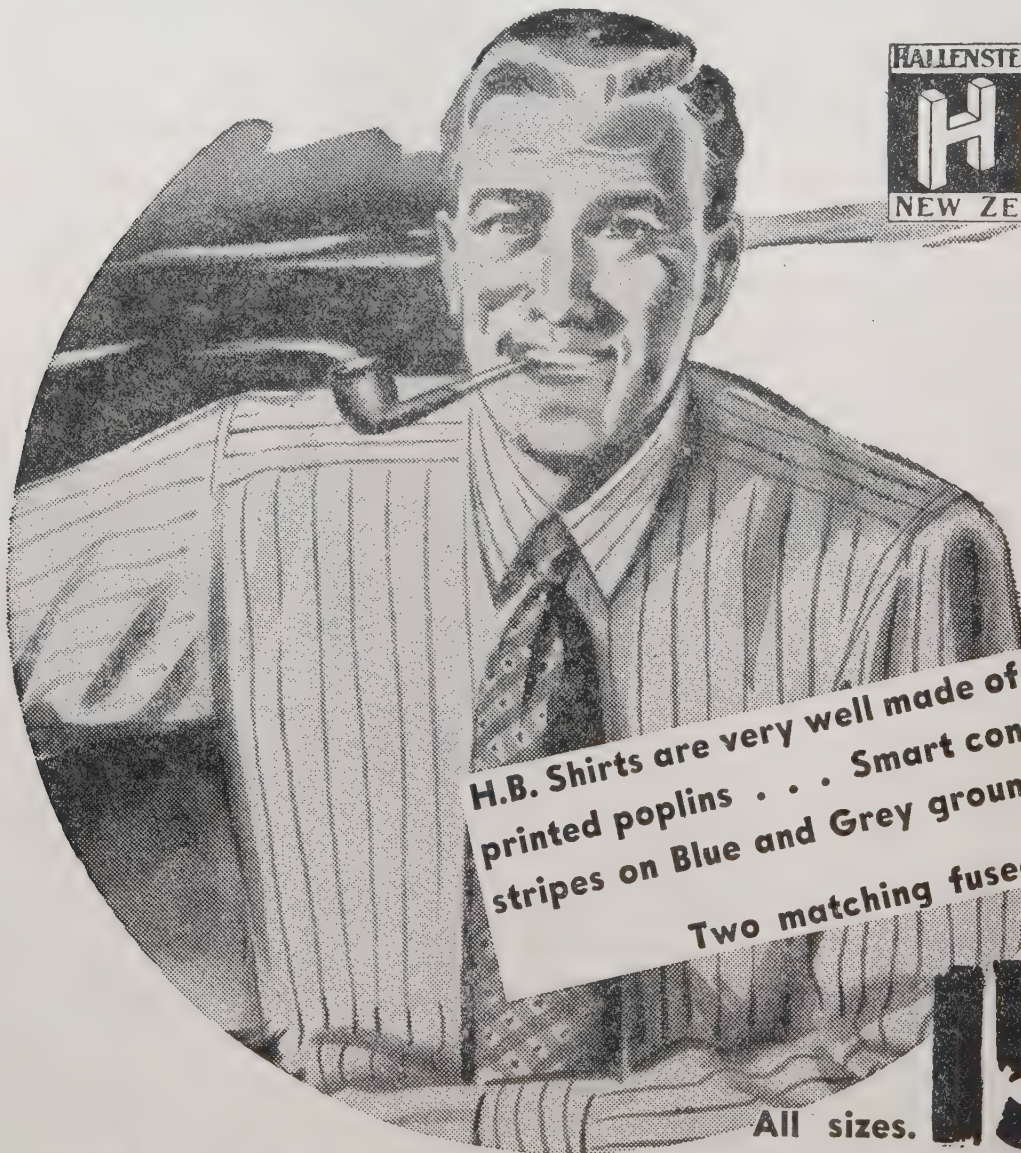
Wheels and Pawls

Wheels should be removed periodically and pawls and springs inspected

to make sure they are operating properly. Worn pawls are liable to get out of place and cause excessive wear in the ratchets and pawlholders. Since these ratchets are a part of the wheel the repair job may prove an expensive one if the ratchets become so worn that the pawls slip over them. Excessive end-play in the wheels allows the pawls to lean outward. This causes uneven wear of the pawls and

pawl-holder and may ruin the ratchets. This end play may be taken up by the take-up washer on the outer end of the hub, but if this adjustment will not suffice steel washers may be placed between the take-up washer and the hub.

Acknowledgment is made to the Michigan State College for the illustrations and information used in the compilation of this article.



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Care of the Plough . . .

ALL WAR is wasteful of materials and man power. Apart from the efforts of the contending Powers to destroy life and property in the hands of their enemies, many other factors tend to increase sharply the degree and variety of waste of the available materials and man-power.

In the present instance it is waste of materials we are considering, and this does not mean only the waste of used articles which are past their normal life, though that is an important field in which much is being, and can still be, done by the reclamation authorities.

In considering the matter of reclamation of what is even in normal times regarded as waste material to be thrown away, it must be remembered that such reclamation is using man-power and transport which could be used profitably for other purposes. As in the case of most human disorders, the place to arrest a trouble is at its source. Any increase in the life of an article is desirable, particularly in time of war, because you save not only the drain on raw materials used in the production of a new article, but also the man-power and machine hours involved in processing such material. So, to stop unnecessary waste at its source in the field of farm machinery, we should attack the problem of making machines last longer.

What, for instance, are the factors that tend to shorten the life of a plough? There are many types of ploughs, but if we consider a tractor plough we shall find that what applies to it applies to all other types. The answer can be stated under four headings.

Rust

When first supplied a plough is well painted. This is done, not only to make its appearance attractive, as is done with a house, but, as in the case of a house, to preserve it and add to its life. Just because the main parts are substantial it does not follow that rust does not matter. Rust, if allowed to establish, continually eats away at the material and eventually so weakens it that the parts will no longer perform the functions for which they were made. How many farmers give their plough a good coat of good paint when required? In this matter of painting, even the use of paint—a vital war commodity—can be conserved if a plough is housed and protected against the weather whenever pos-

sible. One has only to move about the country to see, at times, ploughs still in the furrow where the job was finished. The skeith and mouldboard cannot, of course, be painted, and should be kept bright so that when put into use one does not have to wear the rusted surface away before these parts do their work well and with minimum of draft. If adequately greased or oiled when each period of ploughing is finished, many more acres of work will be done by boards and skeiths. As these parts are in short supply and

the depreciation through unnecessary wear due to rusted condition is very marked, this is a particularly necessary practice today.

Wear

No one expects a motor vehicle, be it car, truck, or tractor, to run without lubrication. Because the parts of a plough run at lower speeds it does not mean that lubrication is less necessary. The stresses on moving parts are considerable and the dusty conditions are severe. At all times lubri-



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cation is a necessary precaution to ensure a minimum of wear and the easy performance of the work.

Quite noticeable savings of fuel can be made by watching that a well-lubricated tractor is not pulling a plough or other implement with dry bearings. In carrying out the lubrication care should be taken to see that the lubricant—be it grease or oil—really does reach the moving surfaces. A squirt with an oil can, a turn of a grease cup, or a push with a gun does not necessarily do the job. Grease may have hardened in the hole leading to the moving parts, or dirt and dust may have entered and blocked the channels provided for the passage of the lubricant. No purpose is served unless you are sure the lubricant has reached the surfaces which need the lubricant. Of course the lubricant itself is wasted. How much lubricant is wasted per year in this way? A great deal more than we would permit to take place if we realised the position.

Rough Usage

All machines, whether large or small, are designed to perform satisfactorily up to certain limits of stress and shock. Once these limits are passed we encroach on the safety factor provided by the makers to take care of occasional overloads. Such

constant encroachment, or occasional severe encroachment, results in breakage. If a plough is of a weight and type designed for ploughing in average clear country it is foolishly wasteful to attempt to work in a swamp where buried timber is known, or likely, to exist. Likewise such a plough should not be asked to work in country of a stony nature where the boulders are of any size and likely to damage the machine. If farmers could see the care with which the plough-smiths set the toes of their product they would realise the wisdom of never exceeding reasonable stresses for the weight of machine they are using. For such heavy work there are specially-designed ploughs and they, and only they, should be used for such conditions.

Careless Treatment

A driver of a motor-car or truck must not only prove his ability to drive but must also constantly use skill and discretion in so doing. Compared with this, many tractor drivers, particularly with crawler-type machines, while competent in any test, do not use skill and discretion in the usual course of their work. Unduly acute turns are made with consequent violent contact of the rear track with the following implement. Not only does the draft portion suffer damage, but

the severe shock and stress strain other parts and generally reduce the efficiency of the plough.

Remember, a plough is designed to have considerable strength to resist stress and shock when travelling in the normal direction, but is not designed to withstand shock by being violently pulled sideways, particularly before it is out of the furrow.

Summary

The care and conservation of ploughs could be summarised as follows:—

1. Give a good cleaning and repaint whenever necessary, and keep under cover to minimise the frequency of painting. Keep all bright parts greased when not in use.
2. Keep all wearing parts lubricated, taking care the lubricant does reach the moving parts.
3. Do not attempt to do work heavier than that for which your particular model was designed.
4. Use care in operating not to damage the plough, particularly in turning with crawler-type tractors, and also to see that it is clear of the furrow before the turn is commenced.

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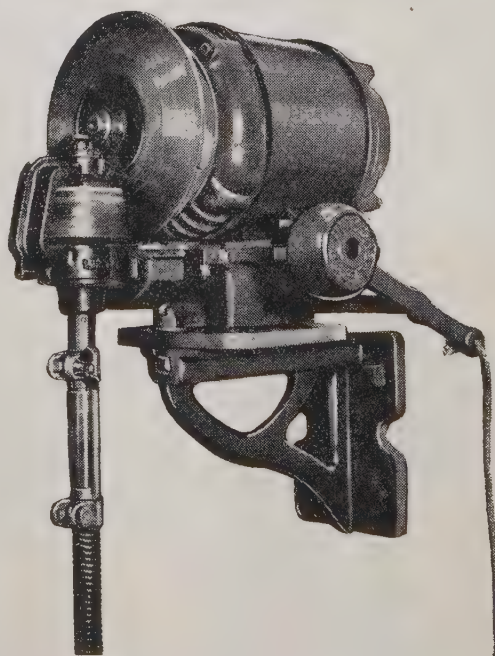
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Soil Erosion—A World Problem

Soil Conservation and Permanent Agriculture

THAT soil conservation is necessary to establish agriculture on a permanent basis is beyond dispute. Essentially, soil conservation is a matter of using the land as it should be used. Proper use of the land is governed by certain physical factors. Some soils are too easily eroded to be cultivated, while others are too steep to be farmed. Soil conservation requires an adjustment of land use in the light of these physical limitations so that every acre is protected with appropriate means for erosion control (mechanical and vegetative, employed individually or in combination), according to its specific needs.

The problem of soil conservation is not confined to the physical aspects of land use only. Certain factors of an economic, social, political, and religious character also influence use of the land. Farmers must make a living. Economic need is a powerful factor which usually outweighs less urgent considerations of conservation. Social patterns, likewise affect use of the land, for instance, a short lease might induce overcropping or overstocking. This article is an attempt to outline the general broad principles of the physical aspect of soil conservation. Social, economic, political, and religious aspects of land use are therefore beyond its scope.

Physical aspects of soil conservation are discussed under the following aspects:—

1. Vegetative Measures.—Maintenance of vegetative cover through:

1. Land use adjustment.
2. Rotation of crops.
3. Strip cropping.
4. Afforestation and Hillculture.
5. Improvement of Pasture.
6. Avoidance of burning of vegetation or plant residues.
7. Care of farm manure; manuring

— By —
LAI-YUNG LI,
Plant Research Bureau, Department
of Scientific and Industrial Research
N.Z., and Lingnan University,
Kwangtung, China.

farmed land to maintain soil fertility.

2. Mechanical Measures.—

1. Terracing.
2. Contouring.

1. VEGETATIVE MEASURES OF SOIL CONSERVATION.

Soil erosion may be viewed as a disease of the soil. To treat a disease, its cause must be determined. In a previous article it has been shown that the fundamental cause of the disease of erosion is impermeability of the water shed, brought about by lack of, or incomplete vegetation cover. It follows, then, that the only satisfactory cure is a vegetative one.

There are several ways in which vegetation, preferably a close growing

one, checks soil and water losses. First, such vegetation serves to reduce or prevent impact of rain on the soil surface. Whenever a drop of rain strikes bare soil, particles are agitated and the finer ones brought into suspension. Vegetation prevents this ill effect by sheltering the ground surface. Second, the speed of flowing water is retarded by plants and by vegetable debris left on the surface. Reduction in speed of the run-off water decreases its power to pick up and carry away soil particles, while allowing more time for water penetration into the soil. Third, increase in soil organic matter by root growth or by incorporation of vegetation improves the water-holding capacity of the soil and favours infiltration of water. Fourth, by absorbing and assimilating plant nutrients from the lower soil strata, vegetation counter-acts leaching. Furthermore, by providing proper environment of food moisture and air, vegetation encourages biological activities within the soil mass. These principles form the basis of any attempt to conserve soil and water by the use of close-growing vegetation.

Maintenance of vegetative cover for soil protection may be secured by the following practices.

1. Land-use adjustment. Hitherto, disregard of soil deterioration has led to unsuitable lands being used for agriculture instead of leaving them in forests, grassland, or reserves. The result leads to gradual destruction and abandonment of these areas. A soil

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conservation survey is necessary for any country; this survey requires that all land be classified according to ease of erosion, and make recommendations towards its proper uses.

The trend should be towards: (a) Relinquishment of unproductive cropped lands to vegetation, ponds, reservoirs, and marshes; (b) more intensive settlement and cropping of first-class lands; and (c) adoption of revised agricultural practices to eliminate erosion and to promote infiltration. The problem is one of balance between requirements for erosion control and the fullest economic use of the land.

2. Crop rotation. Crop rotation requires a recurrent succession of different crops on the same land. The crops used usually involve a cultivated crop (such as potato, etc.), a small grain (wheat), a grass, legume (clover), or legume-grass mixture. Of these, the cultivated crop exposes the soil to the maximum erosion, the small grain permits of less erosion, and the grass or legume-grass controls erosion during the period it occupies the land. The net result for the rotation period is usually a reduced soil and water loss over other areas cropped continuously with cultivated crops. The following data averaged for two 3-year rotation periods, taken from U.S.A., illustrate this point.

Treatments.	Run-off in per cent. of precipitation.	Average annual soil loss, tons per acre.
Continuous cotton	14.22	24.29
Sweet clover, wheat, corn rotation	8.00	0.58

In rotation, the efficiency of a crop to conserve soil and water depends on completeness of coverage and the period of such coverage. On this basis crops may be grouped under: (1) Crops, such as potatoes, tobacco, and most vegetables, which through constant cultivation and poor cover, permit erosion. (2) Crops, such as fruit orchards, on land which part of the year is in fallow and part of the year is in cover-crop, restrict erosion. (3) Crops which through no cultivation and permanent cover prohibit erosion—permanent grasslands. Crops which prevent soil erosion are generally perennials and as a rule, are deeper rooting and more complete in coverage.

3. Strip cropping.* This is another method by which soil and water are conserved. It has been pointed out previously that slope as a factor of

erosion depends on (1) per cent. of slope and (2) length of the slope.

The erosive power of run-off of water decreases materially when the length of a slope is reduced and any method which shortens the slope will conserve soil and moisture. Strip cropping is a method by which a long slope can be divided into a series of discontinuous shorter ones. As the name implies, it is a system in which several crops are planted in narrow strips across the slope of the land. Strips are so arranged that open crops are separated by strips of close-growing erosion-restricting ones.

There are several modifications of this method, the most important being **contour strip cropping**, in which strips are planted on the contour, at right angles to the natural direction of the slope.

In Texas on a slope of from 4 to 6 per cent., a contour rotation of cotton and oats was followed with vetch as a green manure preceding cotton. In 1935, the strip-cropped area was found

* Since, in New Zealand, a greater portion of the agronomic crops are grown on the plains of the South Island, strip-cropping will probably not be as extensively used as in the U.S.A.

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to have lost an average of only 2.7 tons of soil an acre, as compared with 104.6 tons lost from the area cultivated up and down the slope.

4. Afforestation and Hillculture. Where permanent protection from erosion is necessary, forests offer the only satisfactory cover. Where denuded steep slopes and low-lying fields of extremely high value have to be protected, from flood-borne debris, afforestation is most feasible. Again in deep, erodible soils, subject to severe gullyng, stabilisation of gully walls may require permanent forest cover. Furthermore, where sheet erosion has removed the topsoil, exposing the impervious sterile subsoil, tree growth usually provides the only satisfactory control. To be successful, however, afforestation of such areas must be done with trees having low nutritional and water requirements.

In many parts of the world, afforestation has been mainly carried out with conifers (e.g., pines, firs, etc.), which are less exacting in site requirements than hardwoods (oak, beech, etc.). But wherever conditions permit, mixed forests of both conifers and hardwoods are preferred from the standpoint of maintenance of soil fertility. Coniferous litter contains less mineral contents than that of the hardwoods, and is highly acid in reaction, favouring intense leaching of nutrients from the soil. Lunt in his recent lysimeter studies found that under hardwoods the bulk of the material leached out from the A₀ horizon (surface humus layer) including nitrogen in different forms, organic matter, calcium, magnesium, potassium, sulphur, iron, and phosphorus, was either taken up by the roots or fixed in the soil so that only a very small portion penetrated deeper than 4 inches.

Successfully established forests require proper protection and management in order that they may continue to serve their purpose in conserving soil, water, mineral nutrients, organic matter, soil structure, and in promoting biological activities. Physical limitation or ecological factors of altitude, soil, and climate (especially rainfall) should be recognised when attempting to afforest an area, for forests do not develop naturally where the annual rainfall is less than 15 inches. An exception is Elfin Forest or Chaparral in California, which forms a heavy cover with less than 10 inches of rain annually.

For certain parts of U.S.A., planting of tree crops—such as Chestnuts, Oak, Persimmon, Hickory, Olive, Carrobeans, Honey-locust, oil-bearing trees, etc.—has been suggested on relatively steep land where cultivation does not allow permanent agriculture. This has not been sufficiently tested to be of immediate practical value, but the idea is worthy of trial in any area suitable for afforestation.

5. Improvement of Pasture. Pastures started on areas which, because of topographic or other soil limitations, cannot be maintained in grass, should be returned to forest. Successful pasture maintenance requires: (1) Selection of correct species for each locality; (2) sound management of grazing; (3) fertilisation, usually by top dressing, to counteract loss of nutrients through sale of produce and through leaching; (4) protection from fire; (5) re-seeding when necessary. Established grassland, properly maintained, checks erosion effectively. On the other hand, over-grazed, unfertilised, and run-down pasture, readily becomes "open" and permits erosion.

6. Avoidance of burning of vegetation or plant residues. Burning is always accompanied by loss of organic matter which escapes as gases. It also exposes the soil surface. Burning is therefore definitely destructive and

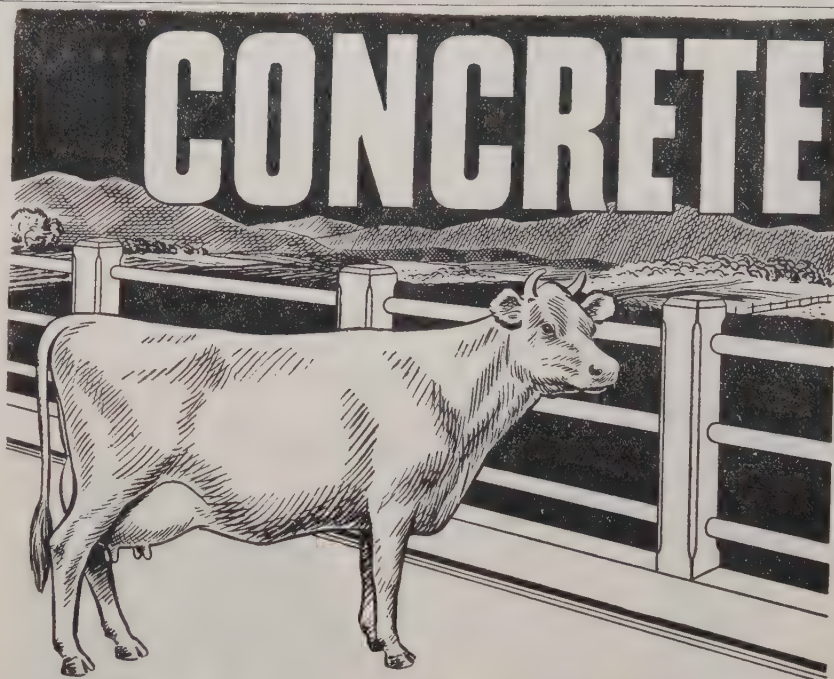
soil depleting. Previous workers, Cockayne and his associates in New Zealand, recognised the ill effects of burning vegetation and advocated its control.

Taylor in his studies of land deterioration in New Zealand recorded the constant use of fire to control scrub and fern as the greatest single factor aiding soil erosion.

In arid and semi-arid regions when all rainfall must be conserved, Duley and Russel strongly advocated crop residues applied to the soil surface to promote infiltration of water. The same practice also helps to check wind erosion.

7. Care of farm manure and manuring farmed land to maintain fertility.

Soil protection through maintenance of vegetative cover over agricultural land other than woodlands requires the aid of manuring in organic, inorganic, and green forms.



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Proper handling of farm manure involves: (1) Providing straw or soil over a cement floor to absorb the liquid part; (2) providing adequate shelter for manure piles to check unnecessary leaching; (3) incorporating manure into the soil immediately after application to prevent nitrogen loss as ammonia (this is especially important when the manure is relatively fresh); (4) application of manure at the proper time, in the manner, at the rate, or to the crop, which would give the best result.

Green manures or cover crops, are valuable as they increase the organic matter content of the soil. The leguminous crops also aid nitrogen. Manuring with other organic or inorganic fertilisers is necessary whenever the fertility level is low.

2. MECHANICAL MEASURES OF SOIL CONSERVATION.

Besides the processes outlined for control of erosion by vegetative measures, there are several mechanical practices of which the more important are: (1) Terracing and (2) contouring.

1. Terracing. An agricultural terrace is an earth ridge with channel above placed approximately on the contour of a slope. Its function is to intercept water, which is either absorbed or conducted slowly from the field. The terrace most commonly used is of a standard size and shape, regularly spaced, permitting cultivation over the entire surface. Detailed descriptions

of different types of terraces have been given by Gustafson and Ayers. Properly located, constructed, and adequately supported by agronomic practices, terraces provide one of the most effective erosion-control measures applicable to cultivated land.

In China, whenever terracing is employed, the danger of excessive erosion is removed. Terraced fields in that country have been farmed successfully for centuries.

More recently terracing has been adopted in landscaping home gardens (especially lawns on slope) in many parts of the United States. Wherever employed terracing allows of quick establishment and maintenance of lawns.

2. Contouring. Contouring refers to tillage practices applied across the slope on the contour. It disregards field boundaries and straight lines.

Contour farming has several advantages. The furrows catch and hold rain, or part of it, thus reducing run-off and erosion, and bringing about a more uniform distribution of moisture. In areas of low rainfall, this practice conserves moisture by storing it in the soil. In humid regions, it reduces run-off by the same action of water-intake. It is also claimed to be time and power saving in cultural operations.

In the United States, contour farming is becoming more and more widely adopted for croplands, grasslands, and orchards. In the croplands, con-

touring is often combined with strip-cropping. On the Great Plains, contour furrows band the slopes for miles of grassland. Fruit trees in many orchard sections are no longer planted in rows up and down the slope, but on the contour instead.

In conclusion, soil conservation, in the broad sense, necessitates an adoption of sound land use principles and practices by agriculture. It involves universal physical measures of land protection together with proper adjustment of certain social and economic forces which tend to promote exploitation of the land. Soil conservation calls for an intimate co-operation between the Government and the people. It demands a better understanding of the soil by the average man, necessitating more intensive education of the public. A nation-wide programme for soil protection is necessary to co-ordinate the preventive measures. Furthermore, research is vital to form the factual basis of conserving practices. In brief, the watchword for soil conservation should be, "use, do not abuse."

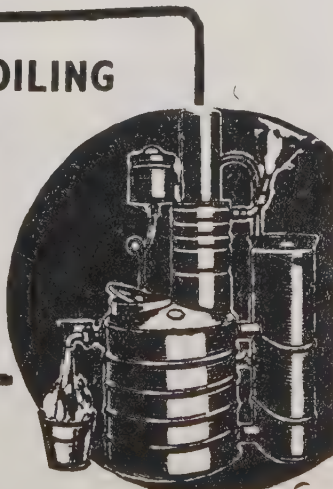
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Grading of Export Butter and Cheese

Leading Dairy Factory Averages For Year Ending 31st July, 1943

Contributed by the Dairy Division.

BUTTER-MANUFACTURING companies which have obtained an average of 94 points or over and cheese manufacturing companies which have obtained an average grade of 93 points or over are listed below.

Of the total 162 creameries or dual plant factories manufacturing butter for export, 19 are included in the list as compared with 22 for the previous year, and of the 299 cheese factories and dual plant factories manufacturing cheese for export, 14 as compared with 17 for the previous year, have averaged 93 points or over.

Of the total factories listed, 13 butter and 9 cheese factories are situated in the North Island and 6 butter and 5 cheese factories in the South Island.

Company	Regd. No.	Brand.	Tonnage. Average. Graded. Grade.
CREAMERY BUTTER.			
Westland	145	Westland	96 94.551
United	1,296	Whariti	223 94.399
Murchison	1,888	Airship	102 94.377
Rangiwahia-Ruahine	760	Quail	19 94.346
Rangitikei	1,360	Rangitikei	285 94.301
Konini	1,203	Konini	447 94.293
Rata	938	Rata	484 94.292
Rodney	394	Rodney	499 94.260

Company.	Regd. No.	Brand.	Tonnage. Average. Graded. Grade.
Taihape	1,188	Tikapu	186 94.241
Kuku-Manakau	905	Ohau	200 94.185
Kaikoura	302	Kai	157 94.141
Awahuri	664	Red Rose	351 94.131
Inter-Wanganui	6	Inter-Wanganui	60 94.120
Arahura	1,516	Arahura	1 94.107
Ruawai	66	Ruawai	1,065 94.086
Levin	910	Lake	400 94.042
Golden Bay	146	Sovereign	554 94.041
Wairoa	1,345	Wairoa	125 94.031
Tolaga	1,007	Tolaga Bay	195 94.021

CHEESE.

Rimu	1,155	Rimu	112 93.452
Stirling	202	Stirling	163 93.424
Orari	254	Orari	214 93.356
Pembroke	234	Pembroke	461 93.323
Okain's Bay	239	Okain's Bay	201 93.182
Barry's Bay	401	Onawe	265 93.135
North Taranaki	723	Flax	140 93.133
Joll, T. L.	1,723	Maori Chief	416 93.124
Maketawa	342	Maketawa	471 93.086
Waiohiki	1,631	Waiohiki	67 93.043
North Taranaki	212	Flax	465 93.041
Greytown-Wairarapa	529	Greytown	723 93.024
Kaimata	992	The Oaks	485 93.021
Pahiatua	140	Pahiatua	203 93.020

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Lucerne on Sand Country

STANDARD lucerne growing practice must be varied somewhat for use on sandy soil, but the crop can be profitably grown on sand country if the needs of the soil and climate are carefully studied.

Normal practice is based on early summer sowing, which dictates that ploughing for lucerne should be done in early autumn, the ground left rough during winter and seed bed cultivation commenced about September, and continued until seed sowing time in late

By

H. de O. CHAMBERLAIN,
Instructor in Agriculture,
Palmerston North.

November or December. This procedure on the sand lands spells disaster due to the habit of such light soils blowing away right down to the bottom of the plough furrow if left without cover crop for any length of time.

The Seed Bed

The best time to sow lucerne on sand is in the autumn—the beginning of March for preference. If, however, weather conditions make this impos-

sible, good results may be obtained by an early spring sowing. In the autumn, if the season is not a windy one, deep ploughing can be done a month before sowing. If it is windy, not more than two weeks can be allowed. It is best to choose old pasture lands which contain the least amount of brown top or other twitch grasses, because in this the weeds are less, and the fertility is highest. Disc on the top on a nice sunny day, and work it with the harrows or cultivators, leaving for three days to dry up. This is most important. Then plough as deeply as possible across the direction of prevailing winds to lessen danger of scour. Leave for about a week before discing up—then work as thoroughly and continuously as possible with harrows and roller to get a firmly consolidated seed bed.

Lime at the rate of one ton per acre should be applied following the first discing after the plough.

Seed Inoculation

Seed of Marlborough strain is the best which is at present obtainable, and it must be treated with lucerne inoculation.

The inoculation for this should be ordered from the merchant from whom the seed is bought. All necessary directions for use are forwarded with the inoculation, but it must be stressed that it is as essential as the seed itself if lucerne is to be grown successfully.

Sowing

If the work of preparing the seed bed has been thoroughly completed the result will be a fine firm tilth, dry on the surface and reasonably damp underneath—damp enough to germinate seed. In sowing the seed therefore, the object is to place it directly in the damp under-soil, and this can be done only with a drill. Sow at an inch in

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depth—rather less than more—and apply 15 lb. of seed, through every coulter.

There is no choice in the quantity of fertiliser, but the ration allowed will be sufficient if sown with the drill at the same time as the seed. If there is not a separate box on the drill, the seed can be mixed with the serpentine superphosphate after it has been inoculated and immediately before sowing.

Wind Blowing

It is advisable not to roll after sowing if the seed bed has been well prepared, because the slight ridges left by the drill, if at right angles to the prevailing winds, provide a little deterrent against wind blowing. The prevention of wind blowing is of first importance on sand, and it is considered good prac-

tice to sow half a bushel of oats with the lucerne to provide a quick cover, both to hold the sand and protect young lucerne seedlings.

The ground must be ploughed in June, or at the latest, in early July, and worked to a seed bed and sown in August for preference, or not later than the first week in September. In such circumstances it is essential that half a bushel of oats should be sown with the seed to give the young seedlings protection against late frosts, or early hot sun and winds. Topdressing when the crop is established should be done after the first cut, when weeds will have been checked, and cultivation of the standing crop is not practicable. If in later years cultivation becomes essential to cope with weeds, it should be done after the third cut, while the weather is hot enough to kill the uprooted weeds. The best implement is a spring-tine harrow, but

failing this a stiff tine cultivator can be used effectively. Never, under any circumstances, disc a lucerne crop in sand country, or the kill of lucerne plants will be nearly as great as the kill of weeds.

Conclusions

Important points to be observed are:

1. Select as clean a grass paddock as possible.
2. Plough furrows should run across the direction of the prevailing winds.
3. Cultivation must be done quickly but none the less efficiently.
4. Seed should be inoculated and sown with the drill. In a year when strong autumn winds prevail breaking the turf would create difficulties, and the farmer must therefore resort to early spring sowing.

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Veterinary Notes for the Farmer

An Unusual Sickness and Mortality in Dogs

SOME time ago an unusual type of sickness in dogs came under the notice of the Livestock Division, a special request being made for an investigation into the nature of an outbreak of sickness occurring in a number of dogs belonging to a rabbitier who had arrived in the district.

The symptoms shown by the affected dogs suggested distemper to all those who had seen the dogs, and to some others who had been consulted. The watery discharge from the eyes of affected animals, together with the formation of sores or ulcers on various parts of the body were somewhat consistent with distemper, but at no time did the dogs show evidence of fever and lack of appetite, two common features of an infectious disease such as distemper. The following are some of the details supplied by the veterinarian who visited the district in order to make enquiries, it being assumed that the disease was distemper and other owners of dogs in the district being apprehensive in regard to the spread of a disease of this nature to their sheepdogs.

Fourteen Dogs Affected

A rabbitier arrived on the property with twenty dogs. Five were chained outside, and the remaining fifteen

were placed in a shed with a boarded floor. This shed had been cleaned out with a strong solution of an arsenical sheep dip about one month before the arrival of the dogs. After two days in the shed, fourteen dogs were showing symptoms of a watery discharge from the eyes and nose, with ulcers forming on the hairless parts that had contact with the floor. The scrotum was particularly affected, the ulcers spreading on to the thighs of the dogs, and also on to the upper lips of dogs of the spaniel type. The remaining dog in the shed was not affected, it having slept on a bag on top of an old table. At this time a good layer of hay was placed in the shed for the dogs, and this prevented further infection and further ulcers. The five dogs chained outside were not affected in any way.

Sixteen of the dogs were seen at the time of inspection, the remaining four having either died or been destroyed owing to the extensive spreading of the skin ulcers. The majority of the dogs had recovered, only four being found affected, two in the scrotum and two spaniels with their upper lips affected. All sixteen dogs were otherwise quite healthy-looking, therefore ruling out the possibility of distemper. The dogs did not refuse their food at any stage of the illness.

In the absence of further information, it was concluded, therefore, that the cause of the skin sores and other symptoms was the contact with the wooden floor dressed with the strong arsenical solution. Some time before this, another farmer in the district had cleaned out his five kennels with arsenical dip solution, and subsequently lost all five dogs after extensive skin ulcers and sores.

Dangerous Practice

It appears, therefore, that it is a dangerous practice to use arsenical solutions for the purpose of washing out dog-kennels. What presumably happens is that after the water has evaporated a thin film of arsenic remains on the treated wooden floors of the kennels. Arsenic of this nature, not in solution, would act as a caustic, setting up inflammation of the skin with ulceration and the formation of sores, which readily become infected. In view of these experiences, it is necessary to use care in the selection of any preparation to be used for the cleaning of kennels. Soap and hot water, used with a good stiff brush, are difficult to beat. Instances may arise when it is even dangerous to use carbolic or phenol, as the dog is very susceptible to carbolic acid poisoning through absorption from cuts or wounds. Carbolic disinfectant may be used freely, provided the dogs have no cuts or wounds, or after using this disinfectant the kennels might be rinsed with water and then thoroughly dried in the sun before the dogs are again placed in them.

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Giesens CARBON TETRACHLORIDE

for Stomach, Bloodsucking Intestinal Worms and Liver Fluke costs only 2/10 per 100 lambs or 5/8 per 100 sheep.

Suttons NICOTINE BLUESTONE COBALT

for Intestinal Hair Worms and Tape-worms costs only 1/5 per 100 young lambs to 5/10 per 100 fully grown sheep.

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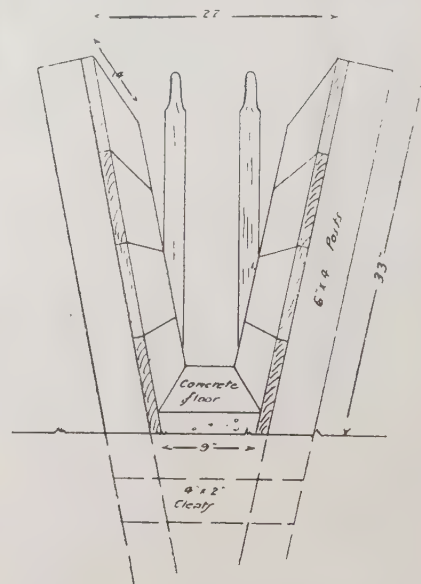
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The V Type Race For Drafting Sheep

THIS type of race has been built on a station in this district and is proving most successful. It is found that sheep do not jam in a race of this style, as is frequently the case in that of the race with the vertical



sides. Sheep run much more freely through it, and the sloping sides make it practically impossible for more than one sheep to enter it at one time.

It is especially suitable for drafting lambs, as its small width at the bottom tends to prevent crowding in the race, giving a freer run and thereby making drafting much more easy.

—G. F. HUDSON, Inspector of Stock, Wairoa.

Effect of Macrocarpa Cypress on Pregnant Cows

ON the 23rd July an owner brought 16 cows and 10 two-year-old heifers, all due to calve in August, to his main property, after grazing on hill country. Cows and heifers were placed in separate paddocks with a fair pick of green feed. The animals were fed with hay made 18 months previously and of rather poor quality. The heifers ate the hay more readily than the cows. Some heavy limbs of macrocarpa were down in the cow paddock and some of this was eaten by the cows in the first few days they were in the paddock.

Six cows calved prematurely or aborted on the 28th July, two more on the 29th, and a further two on the

30th. On the 29th, the hay feed was changed, and the green macrocarpa limbs trimmed off. All animals were in good condition at the time, and there had been no history of more than an occasional abortion on this farm in the past.

Blood samples from affected cows were submitted to the agglutination test for contagious abortion at Wallaceville with the following result:—Three positive, two suspicious and five negative.

The fact that no trouble was experienced with the heifers rather ruled out the possibilities of contagious abortion and poor quality hay, and pointed to the ingestion of macrocarpa as the cause of the trouble, although each cow could not have eaten a great amount of macrocarpa.

—R. P. Gilder, B.V.Sc.,
Veterinarian, Palmerston North.

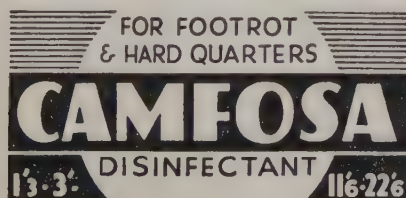
Abortion and Premature Calving

EARLY in July, an owner reported that several of his pedigree Jersey cows had dropped their calves some days before they were due to calve. There were no signs of any infection, and the only possible cause seemed to be that the cows had access to some big macrocarpa trees that had been recently felled. It was thought possible that the resin and turpentine in the trees might have affected such cows as were in a very advanced state of pregnancy.

In connection with this incident, another owner advised that while farming at Levin about nine years ago he experienced a similar trouble. Twenty-four out of thirty-six cows calved at 8 to 8½ months. These cows had access to macrocarpa hedge tops.

This condition does not appear to have been recorded, and possibly some readers might be able to provide more information. One or two farmers with extensive macrocarpa shelter belts in the Poverty Bay district have noticed that cows have a tendency to slip.

—R. E. ALEXANDER, M.R.C.V.S.,
Veterinarian, Gisborne.



Manufacturers: Frank Jackson Ltd.,
536 Parnell Road, Auckland.

Stock Sales

Abbreviations in Common Use

Repeated requests have been received for an explanation of the abbreviations in common use at stock sales. The following list has been supplied by the Livestock Division:—

CATTLE.

G. or G.S.—Guaranteed sound in all quarters.
T.B.T.—Trial before taken.
Light ¼—Milking in all quarters, but not much in one quarter.
¾—Milking in three quarters (only 2/4 same—2 quarters only).
P.B.—Pure-bred.
R.P.—Registered pedigree.
E.—Empty.
Hfr.—Heifer.
R.W.B.—Running with bull.
R.W.B. Oct.—Running with bull October.
Various colours—B. & W. (Black and white), Yel. (Yellow), Jer. (Jersey), R. & W. (Red and white), Y. & W. (Yellow and white).
S.H.—Shorthorn.
Hol. or Fres.—Holstein or Friesian.
Hfd.—Hereford.
P.A.—Polled Angus.
Jer.—Jersey.
Ayr.—Ayrshire.
F. & F.—Fat and forward.
F.F. cond.—Fresh forward condition.
S. & R.—Sound and right.
Fwd. condt.—Forward condition.

I.C.—In calf cows and heifers.
Boners—Cull cows, bulls, etc., for boiling down.
Yrlg.—Yearling.
18 mths.—18 months.

PIGS.

Tam.—Tamworth.
Berk.—Berkshire.
L. White—Large White.

SHEEP.

Rom.—Romney.
S.D.—Southdown.
Cor.—Corriedale.
Merino and all other breeds in full.
R.W. Ram—Running with ram.
R.W.S.D. ram—Running with Southdown ram (or insert abbreviation of other breed).
W.F. lambs—White faced lambs.
B.F. lambs—Black faced lambs.
F.M.—Full mouth.
F.F.M.—Fresh full mouth.
F. & F.M.—Full and failing mouth.
B.M. or Broken M.—Broken mouth.
S.M.—Sound mouth.
Sh. lambs—Shorn lambs.
Sh.—Shorn.
Hghts.—Hoggets.
1 Shr.—One shear (and so on).
2 th.—Two teeth cut.
W.—Wether.
E.—Ewe.

HORSES.

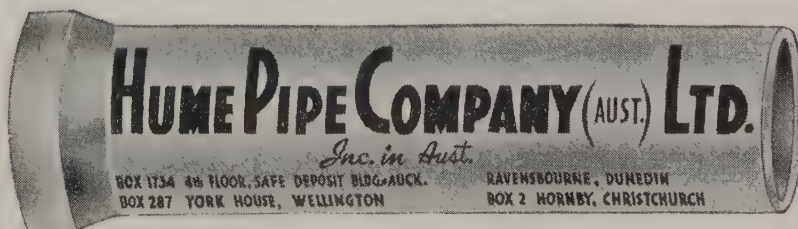
S. & Q.—Sound and quiet.
S. & H.—Saddle and harness.
A.F.W.—All farm work.

Otherwise all terms in full.

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Answers to Correspondents

Lungworm in Hoggets

"R.H.D." (Te Aroha):

Since weaning, my hoggets have been drenched at frequent intervals, put on to a fresh paddock which had no sheep in for two or three months, but grass became rather short and when swedes were ready together with chou mollier, they were hoed in and put back in above paddock daily.

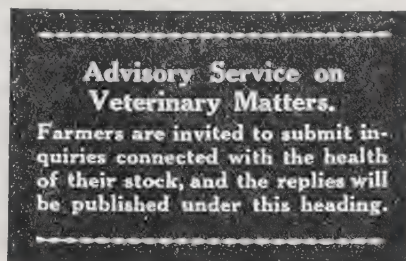
The lambs have not really done well but what I am most concerned about is the amount of coughing that goes on when mustered. Lambs are not scouring. They were drenched about four or five times. Will the building up of their condition on swedes eventually overcome parasites, if coughing is indicative of that, or will further drenching have to be resorted to?

There is an ample supply of swedes. Is it inadvisable to put ewes with lambs at foot on swedes?

Livestock Division:

It is noted that your hoggets are not doing well, and that you are particularly anxious about the amount of

coughing. You can take it that the coughing is due to a heavy worm infestation of the bronchial tubes and lungs of these young sheep. You have kept the stomach and intestinal worms in check with your repeated drench-



ing, and this is all to the good in the fight against the lung-worm parasites.

As there is no specific treatment for lung-worm infection, and as half the fight against parasites may be overcome through good feeding, it is suggested that you continue to do the hoggets as well as possible, rotating them from break to break on the feed available, and always providing a run-off on to a grass pasture. Extra drenching

should not now be necessary, as the spring feed will soon be coming away, and with age and the building up of condition on swedes and chou mollier, the hoggets should be able to throw off the lung parasites. If, however, there is any evidence of scouring developing, it would be advisable to drench the hoggets again.

It is not advisable to put ewes with lambs at foot on swedes. Ewes do not milk well when fed on swedes, nor do the lambs do well when running on dirty paddocks.

Bitch in Poor Condition

"J.P." (Motu).

I have a young 3-year-old bitch which is suffering from some ailment beyond me. She is very dull in the eye although her coat and nose are quite normal. I notice her with tail between her legs and inclined to be staggy when walking. If ears are squeezed slightly she will drop to the ground and whimper as if in pain.

LIVESTOCK DIVISION:—

The bitch may have canker of the ears, but this should be readily ascer-

10 months old . . . 105 guineas

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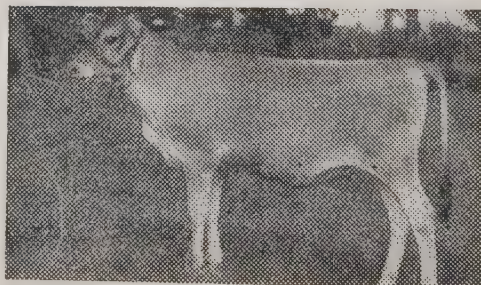
Dear Sirs,

Inglewood, 16/6/43.

I largely attribute the success I have had in calf rearing to the constant use of Osmond's Codliline for the last ten years or more. Calves respond to its high protein and vitamin content and the results in growth and health are outstanding. Mentone Daisy's Delight (by Meon Nemesis—Mentone Daisy o' the Valley) which sold recently for 105 gns. at 10 months old, together with calves fetching second and third top prices at the same sale, can be quoted as examples of Codliline successes.

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C4.15.

tained from an examination of the ears. The ears should be cleaned out with cotton wool soaked in hydrogen peroxide. If any evidence of a blood-stained discharge appears, the ears should be then dried out with cotton wool and a dressing of a few drops of warm olive oil left in the ear. If ulcers are seen and an offensive discharge is present, the ears will require daily dressing as above until completely cured.

In regard to the general condition of the bitch, it would appear as if rest in a warm, dry kennel, and a week or two of careful feeding are indicated. The animal may develop distemper, although the symptoms described are not characteristic of this complaint. The staggering gait is indicative of a type of paralysis sometimes seen in cases of distemper. As it is practically impossible to diagnose the nature of the complaint without an examination of the animal, probably the best advice is to adopt symptomatic treatment and await further symptoms. As the symptoms arise it will be necessary to treat same to the best of your ability, in the meantime keeping the animal warm and dry. Good feeding and nursing should be the main part of the treatment on the information at present available.

Horse With Gripes

"S.H.S." (Dannevirke)—

I have a 6-year-old hack. Twice I have found him with "gripes," once in the early morning and once at night, and on both occasions he had not been ridden for a week. He was grazing in quite a good paddock and fed on good-quality white clover hay always once a day, and, if the weather was rough, twice a day. He seems to have a skin irritation, as he is always rubbing and scratching. I have examined him carefully for "lice" on mane and tail, but he has none. On both occasions I gave him a bottle of warm beer and a tablespoonful of ginger. This in time relieved the pain to a certain extent, but on the last occasion I had to be up with him all night, as he wanted to be down all the time. By morning he seemed all right again, so I gave him a bran mash and later in the day a drench obtained from the chemist. I intend to follow this up with a drench of raw linseed oil and turpentine. How much of the latter should I give?

I have had numerous horses with gripes after hard work, but never heard of it when a horse was not worked. Could you suggest a reason, and give me a prescription to keep by me in case I have trouble in future?

LIVESTOCK DIVISION—

The symptoms suggest that colicky pains were due to impaction of the

large intestine which may occur where a horse is eating a considerable quantity of dry feed—hay, etc.—without perhaps taking sufficient fluid or exercise. These cases usually last a few hours and the horse lies a lot but the pain is at no time very violent. Raw linseed oil would be a suitable treatment. You could put a tablespoonful of baking soda and two of vegetable turpentine in 6 ounces of water in a quart bottle, then fill up with raw linseed oil and shake. This drench should be given slowly to avoid risk of any entering lungs and the horse should not be worked for a day or two after. However, it would be better to try to prevent these attacks by strictly

rationing his hay to 12 lb. a day, which should be given in two, or, better still, three feeds a day. This will prevent his gorging in the evenings.

The itchy condition may possibly be due to worms. The dose of turpentine may remove some of these. However, turpentine is not effective against the ascarid worms—the white ones about 8-12 inches long. A remedy which you could use for this is phenothiazine. I should not advise you to use this, however, unless you have actually observed one or two of the worms in the droppings, as the itch may be due to some other cause.

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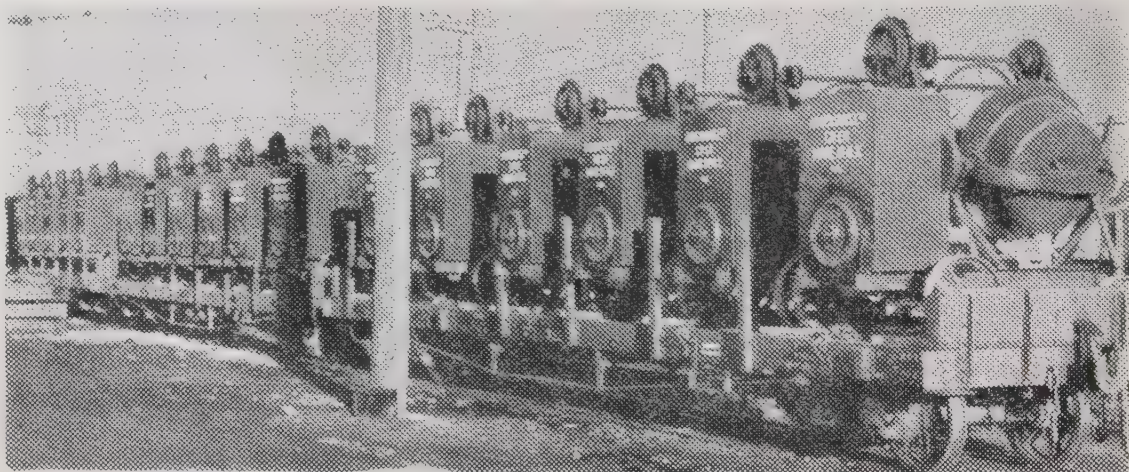


P A I N T

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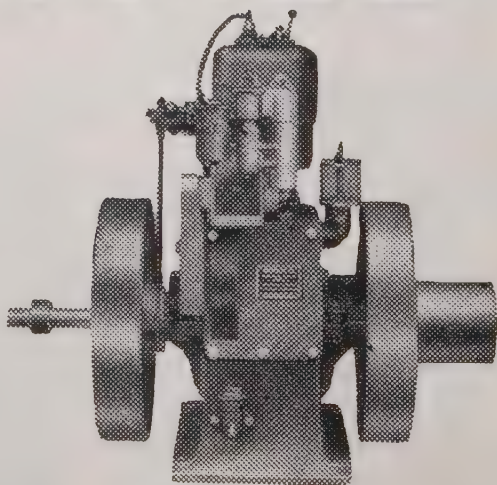
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Farm Practice and Management

Prickly Hakea For Farm Hedges

ON SOME of the heavy clay soils in North Auckland, where popular species such as lawsoniana and barberry do not thrive, farmers are frequently somewhat at a loss when deciding which species of hedge plant is likely to prove most suitable for shelter purposes.

After many years of experience with hedge plants, a Matakana farmer, Mr. E. Roke, is satisfied that he has now solved this problem. His answer is—Prickly hakea.

Judged by its prevalence over wide areas of extremely poor, heavy clay soils, where it occurs as a natural scrub, prickly hakea makes little demand on soil fertility and appears to thrive even under the most adverse conditions. Although it is commonly regarded as just another form of scrub which will some day have to be cleared for grassing operations, Mr. Roke has demonstrated in a practical way that the prickly hakea can provide a very efficient and economical low shelter for field boundaries.

Many Virtues

Prickly hakea plants are to be had for the lifting and are easy to establish. The hedge is eminently self-protecting and forms a dense shelter which is practically stock proof; moreover, double fencing is unnecessary even in the early stages of growth, and the hedge makes no exorbitant demands in the way of trimming—all virtues which should appeal to a busy farmer. Mr. Roke now has a considerable length of prickly hakea hedges, and as some of them are over 14 years old he has had ample time to assess the merits of this species. He is now more than

ever convinced that for his farm at any rate, prickly hakea is superior to any other species.

Method of Planting

Planting operations were carried out at any time in the winter months, the plants being collected as required from a convenient area of scrub which had been burned over about two years previously.

Mr. Roke found it more satisfactory to select plants which were in their second year of growth, rather than to use small seedlings. In order to promote quick establishment, the young plants were each lifted in a triangular block of earth made by three cuts of a spade, and were carefully planted under a fence line at intervals of about 18 inches apart.

To prevent the young plants from being uprooted by mischievous stock, the tip of each plant was dipped in a puddle of cow dung before planting. This treatment, though somewhat crude, had the merit of being highly effective. When planted with a block of the original soil round the roots, the young plants made very rapid establishment and mortality was almost negligible. Care, however, was



Showing type of home-made slasher used for trimming. The blade is constructed from a heavy duty pattern of fern scythe, and takes a very keen edge. Note how blade is fitted into a saw-cut in the handle, also clip bent round blade end of handle to prevent splitting.

taken to replace any casualties, so as to avoid unsightly gaps in the hedge.

Trimming Important

In order to promote dense bottom growth, Mr. Roke advocates light topping at the end of the first year, and regular trimming from about the second year onwards. He emphasises that though this may appear to reduce the rate of growth, it actually results in a bushier hedge which is more stock proof and provides far better shelter. Failure to trim the hedge in the early stages, on the other hand, eventually leads to a thin and spindly hedge of very inferior value.

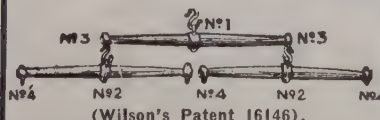
For trimming the hedges, Mr. Roke uses a special home-made slasher

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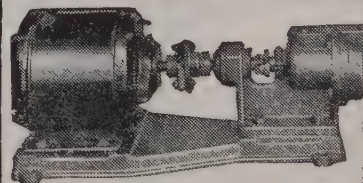
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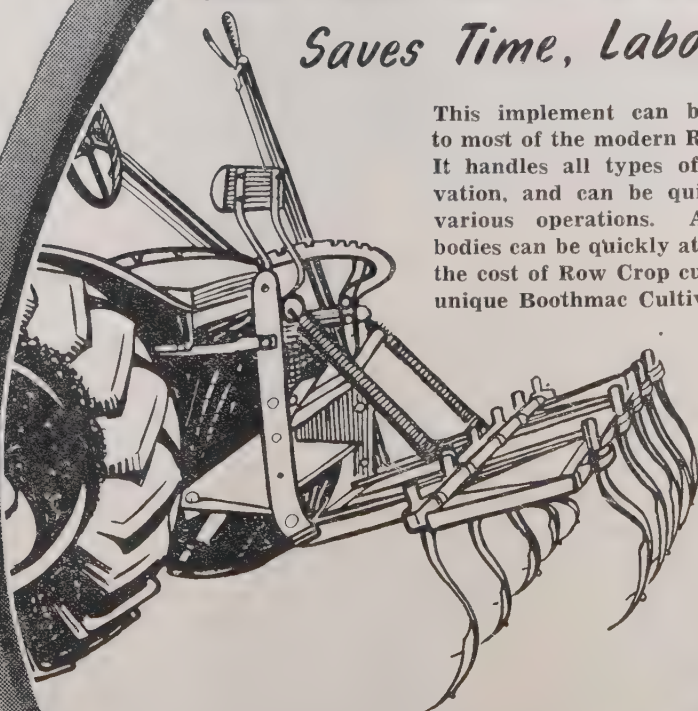
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Left.—View of prickly hakea hedge. Note how the top is bevelled off from each side. By cutting at this angle with the special slasher used, the work of trimming is easily and expeditiously performed. *Right.*—General view of some of the prickly hakea hedges on Mr. Roke's farm. Although these have not been trimmed during the past year, they present a very neat and tidy appearance.

which he has found greatly superior to the purchased article. As shown in the illustration the sides of the hedge are trimmed vertically, while the top is bevelled off from each side at an angle of about 45 degrees. This method, combined with the highly efficient slasher, makes for a very speedy job, and in spite of the long length of hedge the trimming has made no serious demands on the farm labour.

Saves Fencing

Once the hedge is well grown, Mr. Roke has found that it is completely stock proof, and even though the posts used in the fencing were of poor, short-lived timber, this proved of little importance, as the prickly nature of the hedge reinforced by the strands of wire running through it renders it impenetrable to stock.

When, in addition to its stock resisting qualities, the hedge also provides

such excellent shelter and is easy to trim, it is not surprising that Mr. Roke advocates its use. Certainly, it has succeeded to perfection on his farm, and there appears no reason to doubt that many other farmers in the North could also use it to advantage, provided they are willing to adopt the methods which have led to his success.

—P. S. SYME, Instructor in Agriculture, Warkworth.

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"H1 RYEGRASS"— SHORT ROTATION RYEGRASS RENAMED

REFERENCE was made in the March 1943 issue of the Journal to the development and multiplication of a new type of ryegrass, somewhat intermediate in behaviour between Perennial ryegrass and Italian ryegrass. For reasons outlined below it has been deemed expedient to drop the use of the term "short rotation ryegrass" to describe this new type and to substitute in the meantime at any rate the term "H1 ryegrass."

During the early stages of development of this ryegrass, it was envisaged as filling a place in the normal short rotation of the arable lands of Canterbury and other cropping districts, and gradually the name of "short rotation ryegrass" came to be used in its identification.

Since the publication of the above-mentioned reference, however, it has been shown that this ryegrass may become an important factor in increasing production on country of higher fertility devoted to dairying, and it is now felt that the description originally adopted may imply a sphere of usefulness more restricted than trials to date actually indicate.

Thus, while it is now known that this new ryegrass has a place outside the normal short rotation of cropping districts, its place within that rotation still needs to be determined more fully.

In the meantime, therefore, it will be known and referred to as "H1 ryegrass" (i.e., the first hybrid type produced for New Zealand conditions) in the expectation that with greater experience of its behaviour, a name more descriptive of the full utilisation of the type may eventually be chosen.

As "H1 ryegrass," therefore, seed of this new type will shortly be released for further multiplication to growers selected from the list of those placing orders for short rotation ryegrass, while experimental sowings for grazing purposes only will also be continued in order to gain further information of its full value as a pasture plant.

—J. H. CLARIDGE,
Seed Certification Officer,
Wellington

Concrete

has many uses on the farm. Instruction in the mixing of concrete and guidance as to its use is contained in "Concrete on the Farm" (bulletin 184) issue free by the Department of Agriculture, Auckland, Wellington, Christchurch or Dunedin.

List of Creameries, Cheese Factories, etc.

THIS list, amended to 31st March, 1943, contains the names of all registered dairy factories in New Zealand, names and addresses of dairy company secretaries, number of suppliers, quantity of produce forwarded for export, and other statistical information. The list has not been published since 1940 and is unlikely to be issued in 1944. A limited number of this new list is now available, price 5/-, post free, remittance with order, from the Accountant, Department of Agriculture, G.P.O. Box 3004, Wellington.

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Radio Broadcasts

RADIO talks to farmers will be broadcast from station 1YA, Auckland, at 7.15 p.m. on the following dates:—

November 1—"Insect Pests of Citrus Trees," by Mr. A. M. W. Greig, Citriculturist, Department of Agriculture, Wellington.

November 8—"Common External Parasites of Farm Animals," by Mr. J. Mullins, M.R.C.V.S., Veterinarian, Department of Agriculture, Hamilton.

November 15—"Control of Disease Affecting Vegetable Crops," by Mr. T. E. Rodda, Technical Adviser, Department of Agriculture, Hamilton.

The above talks conclude the series of broadcasts for the 1943 season.

Pig Industry Broadcasts.

UNDER the auspices of District Pig Councils concerned, broadcasts will be delivered in November as follows:—

1YA, Auckland—November 18, at 7.15 p.m., "Concrete for Piggeries," by H. E. Clark, Supervisor, Auckland District Pig Council.

2YA, Wellington—November 16, at 7.15 p.m., "Feed Supply for Second Litters," by C. H. M. Sorensen, Supervisor, Taranaki District Pig Council.

3YA, Christchurch—November 18, at 7.15 p.m., "Avoiding Losses in Pig Production," by Hector McIntosh, Supervisor, Canterbury District Pig Council.

2YH, Napier—November 11, at 7.30 p.m., "Talk to Orchardists," by Ivan H. Owtram, Supervisor, Tairāwhiti District Pig Council.

The Lasting Effects of Lime

TRIALS by the Department of Agriculture some years ago proved that a dressing of 1 ton of carbonate of lime per acre applied to the land just prior to sowing down to permanent pasture produced a payable response on most of the medium clay loams of North Canterbury. To-day it is recognised by the majority of farmers in the district that this initial application of lime is necessary if first-class pastures are to be established on the class of country mentioned, and many cases are encountered where the heavy initial application is followed up with annual dressings of approximately 5 cwt. per acre.

If a portion of a pasture is limed and the remainder left untreated it

is found that the sward which has not been topdressed invariably produces a sparse growth of clover compared with the luxuriant clover growth on the limed area; and as would be expected, the grass growth on the former shows little vigour due to the lack of nitrogen, which, on limed land, is supplied per medium of the clovers.

Practical Example

A striking instance of the lasting effects of lime was recently noted on a property in the Cheviot district. In the autumn of 1934 two strips across a paddock of young grass were topdressed with lime at the rate of 1 ton per acre, the remainder of the area being left untreated. The paddock remained in pasture until 1936, when it

was ploughed and sown in wheat. In 1937 another crop of wheat was taken, and this was followed by three crops of oats and one of potatoes. In March, 1942, the paddock was again sown to grass, and when the area was inspected in July, 1943, the two limed strips were quite outstanding in comparison with the portion of the paddock that had received no lime in 1934. Not only was the colour, density and clover content of the sward on the limed strips vastly superior to that of the remainder of the area, but the benefit of the lime was shown in marked preferential grazing, the two topdressed strips being closely grazed while the remainder of the paddock was characterised by a long ryegrass stubble.

—E. G. SMITH, *Fields Instructor, Rangiora.*

Slaughterings of Stock

THE following returns of slaughterings of stock at meat-export slaughterhouses and abattoirs for the months May to August, 1943, have been compiled by the Livestock Division:—

District.	Cattle	Calves	Sheep	Of which Ewes were	Lambs	Pigs
North Island.						
Meat-export Slaughterhouses—						
Auckland	86,714	363,167	68,400	27,705	109,439	25,465
Poverty Bay-Hawkes Bay ..	23,170	33,997	73,864	33,468	129,369	6,773
Taranaki-Manawatu ..	50,832	122,725	50,521	26,048	168,594	25,565
Wairarapa-Wellington ..	19,330	15,628	48,298	24,409	124,095	4,975
Totals	180,046	535,517	241,083	111,630	531,497	62,778
Abattoirs	50,051	15,668	223,042	94,035	34,363	18,400
North Island Totals ..	230,097	551,185	464,125	205,665	565,860	76,178
South Island.						
Meat-export Slaughterhouses—						
Nelson-Marlborough ..	1,429	3,293	7,393	4,552	38,053	3,025
Canterbury-Westland ..	5,658	10,591	119,824	100,634	339,537	10,196
Otago-Southland ..	9,048	1,684	70,585	58,325	569,433	1,592
Totals	16,135	15,568	197,802	163,511	947,023	14,813
Abattoirs	21,034	3,765	95,266	57,470	12,572	5,264
South Island Totals ..	37,169	19,333	293,068	220,981	959,595	20,077
Dominion.						
Meat-expt. Slaughterhouses ..	196,181	551,085	438,885	275,141	1,478,520	77,591
Abattoirs	71,085	19,433	318,308	151,505	46,935	18,664
Grand Totals	267,266	570,518	757,193	426,646	1,525,455	96,255
Same Period, 1942—						
Meat-export Slaughterhouses and Abattoirs ..	309,912	543,668	690,691	387,020	1,403,554	156,642
Same Period, 1941—						
Meat-export Slaughterhouses and Abattoirs ..	231,102	552,777	675,336	424,318	1,585,466	186,468

Slaughterings of Pigs

The 9,704 pigs slaughtered at meat-export slaughterhouses and abattoirs during the month of August, 1943, were distributed in weight ranges, approximately, as follows:—

Up to 60lb.	55
61 to 120lb.	4,361
121 to 160lb.	3,928
161 to 180lb.	480
Over 180lb.	469
Sundries	411
	9,704

The grading of porkers was 88 per cent. of 1st quality, 12 per cent. of 2nd quality, and that of baconers was 84 per cent. of prime 1's, 12 per cent. of prime 2's, and 4 per cent. of 2nd quality.

In the different weight ranges of baconers the grading was as follows:—

121-160	86%, 11%, 3% of P1's, P2's and 2nds respectively.
161-180	70%, 23%, 7% of P1's, P2's and 2nds respectively.

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In the Orchard and Vineyard

Orchard Notes

Protection Against Orchard Pests

DURING the coming months the following seasonal operations will be necessary:

Cultivation to secure aeration of the soil and to conserve moisture.

Spraying for various pests and diseases.

Thinning of stone fruits.

Cultivation

Thorough cultivation of the soil is an essential feature of successful fruit-growing and should be well maintained during the growing season so as to ensure aeration of soil and assist moisture conservation. As a rule it is advisable to cultivate the soil every two or three weeks, and if the season should be especially dry or the land, either from lack of humus or from any other cause, is not in a condition to hold moisture, then it may be desirable to cultivate more frequently. In particular, it is as well to get over all

the orchard just as soon as possible after a rain; unless, of course, it is a rainy spell. Even then it is important to start cultivating just as soon as possible after the rain is finished. For most of the cultivation very shallow stirring of the soil is all that is necessary.

Spraying

The question of how many spray applications are necessary to give effective control of pests and diseases in the orchard is often a problem to the fruitgrower. Some years the early sprays seem to do the best work, whereas in other years the late sprayings seem to be most effective. In the face of all these variations in different seasons it is necessary to keep the foliage and fruit covered with spray material from the early part of the season until late in the summer. Therefore, the spraying schedules as recommended in the August and Sep-

tember issues of the Journal will be found suitable for control.

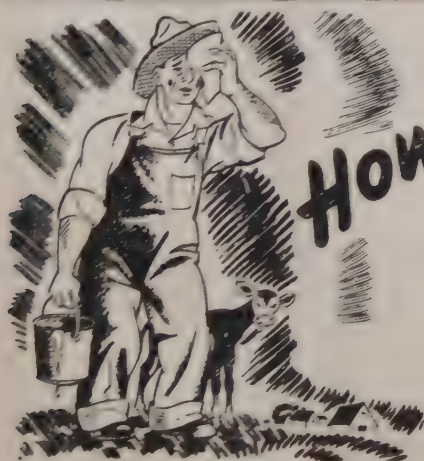
The principal pests and diseases that will need watching during the month are black spot, codlin moth, powdery mildew, brown rot, leaf hopper, red mite, bronze beetle, and fireblight.

Bronze Beetle

One of the most serious pests the fruitgrower has to contend with is the bronze beetle. This pest causes considerable damage to fruit in the young stage by chewing the surface of the apple and often makes it unsaleable. The beetle is a shiny brown oval insect varying in length from $\frac{1}{4}$ in. to $\frac{1}{2}$ in. The eggs are creamy-white or yellowish, oval in shape and about $\frac{1}{30}$ in. in length. The fully-grown larva is a white grub with its body slightly curved and about $\frac{1}{2}$ in. in length.

The eggs are deposited in the ground in an earthen capsule which may consist of one or several cells, with usually three or four eggs in each cell. The eggs are found from the end of November to the middle of February, and the hatching period occupies two or three weeks. The larvae or grubs may be found in the soil practically throughout the year. During the summer they are two or three inches below the surface, but in the winter they are to be found deeper and in an earthen cell. The larvae may be found in the soil under plants frequented by the beetles. They feed on the roots of grasses and other plants. The insect passes the winter in the larval stage and in the spring they approach nearer to the surface, where they transform to the pupal stage in an earthen cell. Pupae may be found in the soil after the beginning of October. The pupal period lasts 3 to 4 weeks. About the beginning of November the adult beetles commence to emerge from the soil and they are present from November to the end of January. The beetles may live a month or more. They are active on the plants during the day, particularly on hot, sunny days. They are generally found on the underside of the leaves and if disturbed they spring off the plant or drop to the ground.

For the control of this pest reliance is placed on the lead arsenate sprays which are applied for the control of codlin moth and leaf-roller. The sprays applied for this purpose cover the period during which the bronze beetles are active. Satisfactory control of this pest depends on the com-



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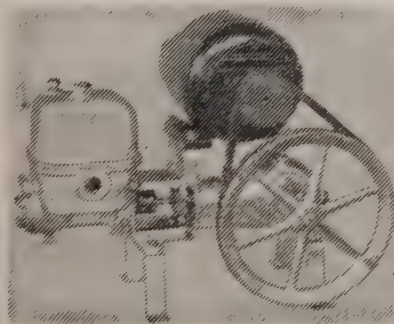
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pleteness of the arsenate coverage on the fruit.

Cultural methods of control are important accessories in the control of bronze beetle. The pest is usually most serious in those orchards which are near or which contain rough or uncultivated ground carrying grass, blackberry, manuka, etc. It is in such places that the insect breeds, and it is likely, though the flight range of the beetle is not known, that the elimination of such areas within the orchard will remove the main source of infection. Periodic cultivation of the orchard is beneficial in that the working of the soil disturbs the beetles which are laying eggs, destroys many of the early stages of the pest, and keeps the ground free from vegetation on the roots of which the grubs may feed.

Fireblight

At this period of the year all quince and pear trees should receive a careful look-over for the appearance of fireblight, and where infection is found it should be cut out and destroyed as promptly as possible. When cutting out infected laterals or small branches the cut should be made some little distance below the visible point of infection. The wound should then be sterilised by swabbing with mercuric chloride 1 gramme; hydrochloric acid, concentrated, 15 c.c.; water, 1000 c.c., and after it has dried, coat with a protective covering such as bitumastic paint.

Thinning Stone Fruits

Some of the very early setting varieties of peaches will have already been thinned, but in the case of other stone fruits thinning should not be

done until the natural second shedding has taken place, at which time the grower should be in a position to form an idea as to whether the crop will be too heavy or not.

If it is decided that thinning is necessary, all malformed or blemished fruit should first be removed, then, if the fruit appears to be overcrowded on that part of the tree receiving attention, the remainder of the fruits should be spaced by thinning, but preference should be given to the larger-sized fruit, taking off the smaller. Even if the crop is light and thinning is not required, the removal of blemished and malformed fruit is an advantage as it gets rid of worthless fruit at an early date and ultimately saves time when picking and packing.

—A. T. DOUGLAS,
Acting-District Supervisor,
Horticulture Division, Auckland.

Citrus Notes

Protection Against Verrucosis

PRUNING of citrus trees should be sufficiently advanced to permit its being completed by the end of November, after which no heavy cutting should be done. Budding may be done at about this time. Choose a period when the bark slips easily. Use mature but young buds. Cultivation, hand work around the trees, and mowing of permanent pastures in orchards should be continued.

Citrus trees should not be permitted to carry excessive quantities of fruit too long after it has reached maturity, as the trees will be requiring their energy to set the new season's crops.

Spraying will be necessary in some orchards in October. Verrucosis will be the principal enemy of citrus trees at this season, the spray to use for its control, also other fungus troubles, such as grey scab and melanose is Bordeaux mixture, 3—4—50. Summer oil may be combined with the Bordeaux spray as a spreader and insecticide, where insect pests are present, at 1-100 strength. Arsenate of lead, 1½ lb. to 100 gallons, may be necessary in November sprays, for control of leaf roller, on New Zealand grapefruit and sweet oranges.

Citrus Verrucosis

Citrus verrucosis, in New Zealand orchards, is a disease chiefly affecting lemons. The fruits, and less frequently the leaves, of standard lemon varieties are affected, while the Meyer lemon is subject to serious attack on both

fruit and leaves. Meyer lemons usually require more cover sprays than do standard varieties. Injury to fruit takes the form of scabby lesions, yellowish, fawn or light brown in colour, raised, varying in size from pinhead or less to about the size of a nailhead, sometimes running together into large, irregular warts, and distinctly hard and rough to the touch. The lesions may appear at the tops of fruit or leaf distortions, in the shape of conical pinnacles, and as much as half an inch high. The appearance of the disease on leaves and fruits is much the same.

Verrucosis spreads from old infections to very young fruits and leaves. These become progressively resistant with age, and practically immune when leaves are an inch wide or fruits about one inch in diameter. Mature fruits and leaves are safe from attack, but, if infected in early stages, the fungus remains viable on them when they are older, and it provides the chief source of infection for future young fruits and foliage, often resulting in an out-of-season infection of young fruit when climatic conditions are favourable.

The effectiveness of Bordeaux mixture is dependent on good coverage of the trees before the disease spores alight on leaves or fruits. Therefore, the spray must be applied before the disease attacks the young fruits. Diseased lemons should not be left lying about the orchard as they are

sources of infection. Diseased fruits are not acceptable for marketing, and they should be removed from the trees and destroyed before the spray is applied.

In fairly clean orchards, where only one spraying of Bordeaux is planned, the application should be at petal fall of the main spring blossoming, usually November. This will give the greatest protection to the largest number of young fruits, for a few weeks, at their most susceptible stage. The blossoming period, for lemons especially, is commonly spread over a fairly long period. Consequently, if verrucosis has been more than very slight in the previous season, one cover spray will not be sufficient. Sprays in October, November and December will be necessary to check a severe infection. The October and November sprays are usually the most effective, because more wet weather may be expected then, and verrucosis thrives in wet weather. These sprays should be applied at twenty-day intervals commencing mid-October, earlier in November, and early in December, but varying the times to suit the season or locality.

Effective spraying depends on thorough coverage of trees from the ground upwards, inside and out. That means wetting every part of the tree. Older leaves and fruits, branches and trunks of trees, may not be susceptible to infection by verrucosis, but they may carry infections of this and other diseases, which in due course emit spores to perpetuate the species. A fine, misty spray, applied with plenty of pressure, will give the best results.

—I. L. NOTTAGE, Orchard
Instructor, Tauranga.

Guide for the Home Garden

Planned Home Garden Production

OF WORLD-WIDE significance is the question of vegetable production, directly linked as it is with the feeding of the millions of people, military and civilian, involved in the present war.

The importance of vegetables as a food has never been so stressed as during the past three years, mainly because of the physical benefit derived from their consumption. Despite the privations and hardships which obtain in Great Britain at present it has been authoritatively stated that the health of the people is better than it was before the outbreak of war. This is, in the main, due to the greater consumption of vegetables which, in the daily diet, have had to take the place of customary foods of a different nature.

It is in this respect that the product of the home garden takes precedence over what may be grown many miles from where it is ultimately consumed. The fact that vegetables deteriorate quickly after being cut from the stem should be more widely known, as also that the longer the time which elapses between cutting and consumption the faster the rate of deterioration until finally the product becomes unfit to be consumed.

But vegetables can become unfit for human consumption without being cut; they can become over-matured because they may not be required for use in the grower's household. The cause of this over-production is due to wrong planning. To grow more of one variety of vegetable than can be legitimately used is just as bad planning as growing too little. It is important therefore—never more so—

that efforts be made to use every part of the garden to best advantage, and to use the whole of the produce which may be grown.

Potatoes

Recent periods of severe weather and frosts in some districts may have retarded the growth of the early-planted crops. This condition is often responsible for prolific weed growth through neglect to hoe the crop. On no account should cultivation be neglected as, once weeds become deeply rooted, removal becomes laborious, and, in addition, disturbs the small developing tubers. Weeds which may have grown unduly high are best removed by cutting below soil level.

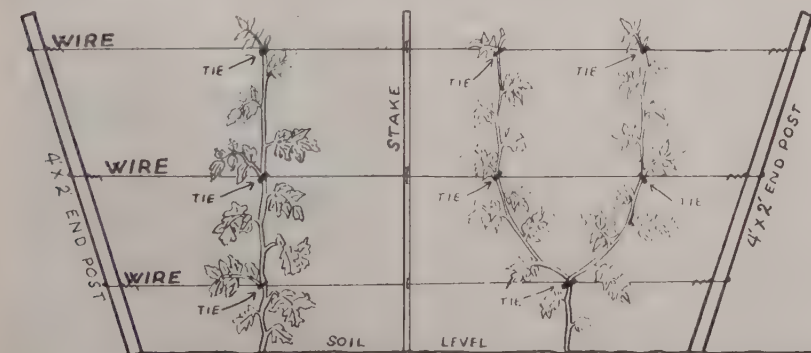
As much soil as it is possible to obtain from the centre of the row should be hoed up against the growing haulm so that from the top of the "ridge" to the bottom of the furrow shall, as nearly as possible, resemble an inverted V. This form of "banking" or "ridging" has two outstanding advantages. Firstly, the top developing tubers will be kept well covered with soil, thus being protected from the depredations of the potato tuber-moth. Secondly, should the foliage become badly affected with late blight, it may be removed by cutting above the soil level. Blight infection of the tubers will thus be prevented.

Spraying with Bordeaux mixture as a protection against blight attacks can always be recommended; but this is rarely necessary for a crop which may be dug before Christmas. It is, however, desirable that main and late plantings should be sprayed.

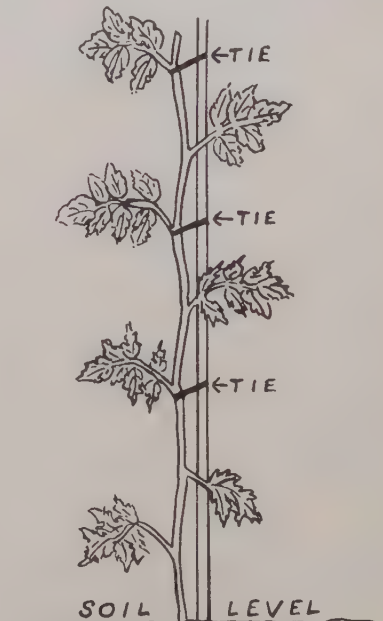
Tomatoes

Towards the end of October will, generally, be the most suitable time for planting. Before the plants are set the method of growing should be decided on. If it is intended to grow the plants with one stem only they should be set closer together than for double-stem growing—12 to 14 inches and 16 to 18 inches apart respectively. For single-stem planting and to prevent plant-root injury, it is advisable to drive into the ground the stake to be used and to set the plant beside it. As soon as setting the plants is completed, they should be fastened to the stakes. This operation will protect them from the damaging effects of high winds. The material used for tying should first be fastened to the stake, then taken round the plant under a leaf just where it joins the stem. As the plant grows the tying should be repeated in the same manner (see illustration No. 1).

To grow plants with two stems, and to avoid double staking, illustration No. 2 will demonstrate the procedure which should be followed. For a row of 20 plants, 4 in. x 2 in. end posts put into the ground to a depth of 30 inches will suffice. The above-ground



Left: Single stem tomato plant fastened to wires. Right: Double stem tomato plant fastened to wires. The tie is made under the leaf stem.



Single stem tomato plant fastened to stake. The tie is made under the leaf stem.

portion of posts and stakes should be in accordance with the height to which it is intended to grow the plants.

Leeks

It was suggested in the September issue of the Journal that the area of the garden in which the spring cabbages had been grown would be suitable for a bed of leeks. For early maturity and best development, November-planted beds usually give the best results. Planting recommendations were made in the August issue of this Journal.

Lettuce

The early spring-planted lettuce should be ready for harvesting by mid-October. Small beds of this vegetable are necessary if a convenient succession is desired. During periods of dry weather transplanting young seedlings should be done with considerable care. The lettuce plant is shallow-rooting, and, when set in dry soil, may receive a serious setback. "Watering in" is one method of ensuring prompt rooting of the seedlings; but many growers during the summer season sow the seeds thinly in garden rows, subsequently thinning out the plants to the necessary distance. Lettuce—tender and succulent—cannot be grown under dry conditions; but neither can the crop be successfully produced where the soil is not well drained.

Asparagus

During October and November harvesting spears from mature crowns will probably be in full swing. Cutting should be carried out with some care, as there is always danger of injury to developing buds during the pre-emergence period. A cutter, the blade of which is shaped with a bevelled edge, somewhat resembling a carpenter's chisel, and used with a slightly sloping downward thrust on the spear being cut, will rarely injure closely adjoining buds. The addition of a "straight" nitrogenous fertiliser will have a decidedly beneficial effect on the size of the spears and the aggregate yield of the bed. Cutting from well-established beds beyond mid-December may lead to deterioration of the productive capacity of the roots and shorten their useful and profitable life. Cutting on young beds should be carried out with discretion.

Beans—Climbing

Garden space can be considerably economised and harvesting secured over a much longer period by growing climbing beans in preference to dwarf varieties. Any convenient, substantially-placed upright up to 6 ft. high, or an ordinary wire fence may

be used and the tendrils trained round either. Wherever they are grown care should be taken to prevent an undesirable shadow falling on some garden crop which may be growing near them. The rows should, as far as practicable, run north and south. If this is done both sides of the plants will receive an equal share of sunlight.

If the seed is sown in ordinary rich garden soil a small handful of superphosphate to each seed "hill" should

Don'ts

Don't

Overlook the preparation of a seed bed for swedes to be sown during December. This is an important and valuable acquisition to winter vegetable supplies.

Don't

Neglect to make a sowing of peas for successional cropping. In cold districts a dwarf variety—W. F. Massey—may be suitable to ensure a full crop.

Don't

Consider that crop management ends with setting out plants. That is only the first real change in the life cycle of a garden vegetable plant. "Eternal vigilance" is the price which must be paid for a successful crop.

Don't

Be satisfied that the most and the best have been done with the garden space available. No advantage is gained, however, by attempting to cultivate more land than can be conveniently managed.

meet fertiliser requirements. Climbing varieties recommended are Emperor, Fardenlosa, Epicure, and Market Wonder.

Parsnips

Provided the garden operations have been properly planned, November is the month when parsnip seed should be sown. Greatest success with this vegetable—which occasionally may be disappointing—can best be achieved if the soil has previously been well and deeply dug. The roots penetrate to a considerable depth in search of plant food, and in so doing obtain nutriment which has passed beyond the reach of the roots of most garden vegetable plants. It is not possible to secure a well-grown bed of parsnips on a poor, shallow soil, or on a part of the garden which is badly drained. Provided the area selected for growing is in reasonably fertile condition, superphosphate 2 oz. to 9 ft. of row will be adequate. Forked roots usually result when fresh stable or farmyard manure is applied to the

ground when the seed bed is being prepared. This is best applied during the previous autumn.

In rows 12 to 15 inches apart, the seed should be sown in shallow drills, and covered to a depth of $\frac{1}{2}$ inch. As the seed is light, and if it is being sown during windy conditions, mixing it with some dry sand is an advantage. The seed should not be sown too thinly, and only fresh supplies used, old samples being discarded.

Vegetable Marrows

During prolonged periods of warm, dry weather plants of these and all other gourds should be closely watched for the presence of aphid on the leaves. These can be effectively destroyed by using nicotine sulphate, which may be purchased in one ounce bottles. Derris Dust will also be effective. Plenty of water is necessary for best results with these vegetables while growth is proceeding, and when water is being applied a thorough soaking should be given.

Early Savoy Cabbage

Plants from seed which may have been sown in September should now be ready for setting out, and provided this is done as early as possible and while weather conditions are favourable, the plants will obtain a good start before warm, dry weather becomes general.

Well-rotted stable or farmyard manure dug in when preparing the plot will be a valuable addition to the soil, and will be of particular benefit to the savoy cabbage plants. As an additional fertiliser, blood and bone applied along the planting rows at the rate of 1 lb. to 36 ft. should see the cabbages to maturity. The rows may be spaced 24 inches apart, and provided the plants when being set out are "staggered," that is, not placed exactly opposite each other in the parallel rows, spacings of 14 inches will be sufficient. It would be an advantage if the plants were watered immediately after setting is completed.

—D. K. PRITCHARD, Instructor in Vegetable Culture, Wellington.

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Seasonal Work for Beekeepers

Preparatory Work for the New Season

A DETAILED examination of all colonies may be undertaken during October, according to locality and weather conditions. A number of empty supers, also boxes of drawn combs and frames fitted with foundation, should be taken into the apiary for use where required during the overhaul of each colony. After lightly smoking the bees, first at the hive entrance and then under the mat, remove the hive lid and place it upside down at the right-hand front corner of the hive, and lift both brood chambers on to it.

Clean the bottom board of all wax particles and debris and replace the hive body containing the brood nest. Examine the brood critically, taking note of how the queen is laying, the amount of stores, including any freshly-gathered nectar, and the condition of the combs. If the brood is patchy or little in evidence a poor queen may be suspected and if mainly drone brood is present a drone-laying queen, or laying workers may be responsible, whilst a complete absence of brood and eggs indicates that the hive is in all probability queenless. From these observations the immediate requirements and future prospects of each hive can be ascertained.

A careful estimation of the amount of stores is necessary to be sure that at least two or three full combs holding approximately 15 lb. of honey, or the equivalent, stored around the brood-nest, is present in each hive to maintain brood-rearing during the critical period which occurs between the middle of October and the start of the main honey flow. The presence in the hive of freshly-gathered nectar will give an indication of the likelihood of sufficient stores being available from natural sources for immediate needs.

The lower brood chamber should contain ten frames, the second nine. As many frames of brood as possible up to eight or nine should be placed in the bottom chamber at this period of the season, and the balance of the frames containing honey and pollen placed in the upper one. If the apiary is in a sunny, well-sheltered spot the first frame of brood may be placed against the wall of the hive on the warm side. All inferior combs should be replaced by good worker ones as soon as freedom from honey and brood will allow, and as little drone comb tolerated as possible. If nectar is

coming in, a few frames of foundation can be used in the second brood chamber, and if the hive shows signs of becoming congested a super of drawn comb or foundation can be added.

All damp and frayed mats should be replaced and grass cleared from hive entrances, which can now be enlarged according to the strength of each colony.

Making Increase

A simple method of making increase is to take two frames of bees and hatching brood from a strong colony, and place in a nucleus box with a frame of honey and pollen and one or two empty combs. The brood and bees should be put in the centre of the nucleus box and an additional frame of bees shaken on to the combs. To be sure the queen will not be taken from the parent colony it is better to cage her for the period of the operations. Immediately the nucleus is formed a queen should be introduced by the cage method and the entrance closed with green grass packed tightly enough to keep the bees confined for a couple of days and the nucleus then moved to a distant part of the apiary. If desired a ripe queen cell can be given in preference to a laying queen, but this alternative will delay the development of the colony.

Transferring Bees

Transferring bees from box hives to standard equipment is a job that should be undertaken during the late spring before the bees have stored much honey. The box hive to be transferred should be given a good smoking and then moved a few feet from its original position and turned bottom up, and another box of the same dimensions placed on top of it, the two being cleated together. The bees in the original box should then be drummed into the upper one by beating on the sides of the box hive for ten minutes or so. If drumming is continued sufficiently long the bees will eventually desert the combs in the bottom box. When this has occurred, the boxes should be unfastened and the upper one now containing the bees placed on the original stand to allow the field bees to enter. The work of removing the brood and comb from the box hive can now be carried out. The combs should first be cut from the sides with a knife to allow the sides

of the box to be removed. Each comb can then be separately cut away from the top of the box, and any bees remaining brushed off.

An empty super, bottom board, lid, sack mat, a number of empty frames, and several drawn combs or frames with foundation fixed should be provided to accommodate the bees and brood. The brood should be cut to a suitable size and fitted into the empty frames and may be held in place by rubber bands cut from an old inner tube or tied into position with fine wire. The frames holding the brood are then placed in the centre of the super and frames of drawn comb or foundation placed on either side. The box containing the bees is now moved aside and the new hive put in its place. A sack should be spread out before the hive entrance and the bees dumped from the box on to it as near the entrance as possible. The bees may be smoked very gently into the hive, the entrance of which must be kept from becoming blocked by the bees by occasional use of a bee brush. When the bees have settled down the lid can be removed and the mat placed over the frames, leaving one corner turned back.

To dispose of any reasonable amount of honey that may have been in the box hive is a simple matter. An empty super is placed on top of the hive and the honey combs threaded on to a thin, but strong, sharp-pointed piece of wood, just long enough to be wedged inside the super. These combs can then be spaced along the length of the stick to allow the bees easy access. When the bees have removed the honey the super and empty combs should be taken away. After a reasonable time the rubber bands or wire can be lifted from the old brood frames and as the season advances these frames can be gradually moved to the sides of the brood chamber and eventually removed altogether. Transferring in the above manner should not be carried out in an apiary occupied by other hives unless some honey is coming in at the time because of the risk of robbing.

—R. S. WALSH, Apiary
Instructor, Auckland.

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Notes for the Poultry Farmer

The Principles and Practice of Chick-Rearing

(Continued)

WHEN the source of supply of day-old chicks is the poultrykeeper's own incubator-room, then it is possible to carefully grade these chicks before placing them under the brooder. It is uneconomic from every point of view to include under-sized, poorly-hatched, and crippled chicks in a brood. Culling, one of the most important operations on any poultry farm, should start with the day-old chick.

If purchasing day-old chicks, place an order well before the hatching season, thereby avoiding disappointment and ensuring that the chicks are available at the time they are required. When a late order is placed, so often only late-hatched chicks are available, and these are rarely as profitable as laying pullets when compared with those incubated during the main hatching season. Equally important is the fact that late-hatched cockerels do not compare favourably with the earlier-reared males. It is also important that day-old chicks should be purchased from a reputable breeder. Newcomers to the industry are warned against buying cheap chicks from a source of which they have no knowledge. Many disappointments and even financial losses might be avoided if poultrykeepers would purchase from breeders who do not sell chicks bred from pullets, while there are obvious advantages in buying chicks from stock which has been tested for Pullorum disease (B.W.D.). It is of interest to note that properly-packed day-old chicks will travel long distances (Wellington to Invercargill) without taking any harm or suffering serious losses.

Chick-Sexing

It is now a well-established practice in the poultry industry to have day-old chicks sexed by specially-trained chick-sexers. An efficient chick-sexer can, by a rapid inspection of the vent, tell the sex of a chick. The Department of Agriculture grants chick-sexing certificates to candidates presenting themselves for examination, if they prove capable of sexing 200 chicks in 30 minutes, with an accuracy of 95 per cent. In commercial practice, chick-sexers may sex chicks at the rate of 600 to 800, or 900, per hour with this standard of accuracy. It can be stated here that no evidence has yet been produced to indicate

By F. C. BOBBY,
Superintendent of Poultry
Husbandry, Wellington.

that well-hatched chicks sexed by an efficient and careful chick-sexer suffer any injury as the result of the present generally accepted methods of sexing. Millions of chicks are sexed annually in the large poultry-producing countries. Had the operation been injurious to chicks, this would have been demonstrated some years ago.

The purchase of day-old pullets, or the practice of having home-hatched chicks sexed, has obvious advantages in the matter of saving brooder capacity and food consumption on unwanted cockerels. The cost at present (1943) is approximately one penny per chick sexed; while chick-sexers are operating in all the main poultry-producing areas.

Preparing the Brooder

Irrespective of the type of brooder to be used for rearing chickens, there are certain practical preparations which have to be made prior to the arrival of the chicks. Any brooder-pen should be cleaned thoroughly, with special attention to the floor. Where a concrete floor is used, this should be well washed with a strong disinfectant, or with a caustic soda solution. Before doing this it is advisable to scrape the floor carefully to remove any droppings which may have remained sticking to the floor from the previous season. It is obvious that a well-finished concrete floor, with a smooth surface, is the easiest to clean. This point should be kept in mind when putting down the floor. If board floors are used, and they are excellent for chickens, this type of floor should be scraped, washed, dried, and then brushed over with creosote before the start of each new rearing season. Creosoting is an effective method of killing parasites such as coccidia, which may tend to carry over from one season to another. A flame-thrower is frequently used on concrete floors for destroying these parasites.

In the matter of litter for a brooder-pen, opinions may differ, but a satisfactory method is to cover the floor with dry, sharp sand, and then a further layer of chopped straw. Some

poultrykeepers find it satisfactory to place their hovers straight on to a litter of this type, while during the brooding period the chopped straw under the hover is changed daily after the first few days. Often the hover is moved daily to a new position in the pen. The reason for this particular care is to ensure that the litter under the hover does not become damp and badly soiled. In spite of the heat under the hover, it is a common occurrence for litter to become damp where the chickens cluster together at night, and few things are more damaging to chickens than this dampness. Constant care should be taken to avoid this most undesirable condition.

In recent years poultrykeepers have introduced the use of wooden frames, covered with small-mesh wire-netting, under hovers. These frames are made in two sections for the sake of easy handling, and should project not less than a foot beyond the edge of the brooder canopy. When constructed of 2in. x 1in. timber there is not less than two inches between the wire-netting and the floor. As the chicks grow, this frame may be raised on small blocks, and the distance increased. It is the custom in New Zealand to cover these frames with an open mesh sacking, and a further covering of chopped straw on the sacking. This is satisfactory, **providing** the litter is kept clean and the sacking removed gradually after the chickens are ten days of age, so that at a fortnight old the young birds are sleeping on the wire-netting.

The whole object of these wire frames is to allow air to circulate under the chickens and to prevent the dampness referred to above, caused by the chickens sweating in an insufficiently-ventilated atmosphere under the brooder canopy. Thus, if the sacking is not removed as soon as is consistent with the amount of heat required, then the sacking itself will become damp and the whole object of this type of wire frame floor is defeated. Furthermore, once the sacking is removed all droppings pass through the netting and the birds are sleeping under more hygienic conditions, while the necessity for the daily cleaning of litter or of moving the hover is removed. Wire frame floors are commonly used in England for rearing, but no sacking is used. Half-inch mesh wire-netting is used with a hover supplying adequate top heat,

and the day-old chicks are put straight on to the netting with entirely satisfactory results. Wire frame floors can be strongly recommended when they are properly used. Whatever system of management is used and irrespective of the type of brooder, it is a basic principle of sound brooding that the conditions under a hover must be completely dry and clean.

It will be obvious that when chicks are first placed under a hover there will be a tendency for them to wander away from the source of heat, and since a hover cannot call them back, as does the broody hen, such chicks are liable to be chilled. To prevent this, a screen of metal or some other suitable material, is placed in a circle round the hover. This surround should be about a foot to eighteen inches high, and should be placed at approximately a foot from the edge of the canopy all round in the first instance. Not only does this surround prevent chicks from straying away from the hover, but it conserves heat, and more important still, prevents any ground draughts reaching the chicks.

Thus should a brooder be prepared before the chicks arrive, the source of heat should be put into operation about 24 hours before putting the chicks under the hover, to warm up the surroundings generally and to test the temperature obtained. This may be checked in the first instance with a thermometer propped up near the edge of the hover, when a temperature of 90° F. should be aimed at. Once the chickens have been placed under the hover, chicken-rearers are advised to judge the satisfactory or otherwise nature of the heat by the chicks themselves. Chickens should not be allowed to crowd towards the centre of the hovers in an endeavour to obtain sufficient heat. Sufficient surplus heat should be available to force the chicks to spread themselves out comfortably towards the edge of the hover. There should be no signs of panting, but on the other hand there should be no sign of the chicks huddling together in clusters in an effort to keep warm. Experience will soon teach the rearer what to look for in this respect. Properly-heated chicks will sit about in comfort well away from the source of heat. When visiting chicks at night the rearer may be assured that chickens are quite comfortable (or alternatively all dead) if there is not a sound to be heard. If chirping is heard, it is certain that something is wrong—probably the temperature under the hover.

While heating up a brooder it is a sound practice to put the water fountain inside the metal surround, in order to take the chill off the water. It is not wise to give day-old chicks stone-cold water during cold weather,

but on the other hand water should be available from the start.

When to Put Chicks Under a Brooder

Where chicks are hatched on the farm it is recommended that they be taken off from the incubator in the morning, held in boxes during the day in a warm room, and put under the hover in the late afternoon. Such chicks do not need feeding until the next morning, and benefit by a good rest after the energy expended in struggling out of their eggshells. The first feed, however, should be given the next morning. With day-old chicks that have travelled by train or boat, these should be put under the hover as soon after arrival as possible, and given their first feed without any further delay. There is no evidence to show that injury can be

done by feeding chicks too soon after hatching. The old theory that sound and healthy chickens should not be fed for from 48 to 72 hours after hatching has long since been exploded. In fact, there is some danger in withholding food for such a period, since the first-hatched chicks may have been in the incubator at least 36 hours before being taken from the machine. Add to this a further period of 48 to 72 hours of starvation, and the point at issue will be readily appreciated. A chick lacking in food will chill more readily than one that has started to feed. Particular care should be taken not to chill the chickens between the incubator-house and the brooder-sheds. The use of properly-constructed day-old chick-boxes will remove this danger.

(To be continued.)



Members of an N.Z.E.F. unit having a snack somewhere in the Middle East.—Official War Photo.

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Federation of Young Farmers' Clubs

Western Bay of Plenty Annual Field Day

THE annual field day of the Western Bay of Plenty Young Farmers' clubs was held this year on Mr. M. A. Wilkins' property at Pongakawa. Ideal weather helped to make the day both successful and enjoyable. There was a very large attendance, representatives of all the active clubs in the district being present. Nearly forty Y.F.C. members entered the three stock-judging competitions, proving that interest in the field day is increasing year by year. A number of senior farmers of the district also attended and voiced their whole-hearted approval of the activity.

Early in the afternoon members assembled at the homestead, from whence they proceeded along the road, bordered with gums and pines, to the yards where the animals were penned. Favourable comment was made regarding the practical use to which concrete had been put, yards, sheds, piggeries and posts all testifying to the manner in which concrete can be of value. As far as the eye could see, fences were wired to concrete posts and strainers, making a neat picture against the background of trees—as one young farmer said, "Artistry in concrete!"

Judging

Before the judging and demonstrations commenced, the District Committee chairman, Mr. W. P. Nichol, welcomed the visiting members, who were then free to commence their "pointing" and "reasoning." After sufficient time had elapsed for members to "place" all the animals, the cards were collected and marked, the judges in each class giving a comprehensive demonstration on the animals judged. The official judges were Messrs. G. F. D. Watson (dairy cattle class), G. P. Stratt (sheep), and J. A. Gulliver (pigs); the last-named judge is an active club member.

Results

The results were as follows:—Dairy Cattle Class: Senior—B. Vant (Paengaroa), 1; C. Riddell (Paengaroa), 2; T. Summerhayes and J. F. Reid (both of Pukehina), tied for 3rd. Junior—I. Rowlandson (Tauranga), 1; G. Nichol (Te Puke) and S. Stratton (Paengaroa), tied for second; R. Russell (Paengaroa), 4. Sheep Class: I. Spratt (Paengaroa), 1; S. McDowell (Paengaroa), 2; S. Gibbons (Pukehina), 3; A. F. Walter (Paengaroa), 4. Pig Glass: K. Conway (Paengaroa), 1;

S. McDowell (Paengaroa), 2; A. F. Walter (Paengaroa), 3; E. Marshall (Paengaroa), 4.

At the conclusion of the judging, the district chairman (Mr. Nichol) congratulated the winners in the various classes, and, on behalf of the District Committee, expressed appreciation of the judges' assistance. He pointed out that it would be impossible to hold such educational field days without the help of the senior farmers, who so willingly placed both their property and services at the disposal of the Y.F.C. movement. The party then adjourned to the homestead for afternoon tea, supplied by Mrs. Wilkins and her helpers, after which Mr. Nichol extended the thanks of all present to the host and hostess, Mr. and Mrs. Wilkins.

The visitors then attended a demonstration at the concrete factory, where Mr. T. Marshall explained the technique of making concrete "do just what one wanted it to do!" The methods used in making the posts and strainers were eminently practical, even the "feet" and "stay blocks" being moulded in concrete for the all-concrete fence.

In connection with the stock-judging competition, the Paengaroa Club holds the Gulliver Cup for the ensuing year. This cup was presented last year for a points trophy, and was on that occasion won by the Paengaroa club also. This year's field day was considered by all who took part to be the most successful activity of its kind that the Western Bay of Plenty District Committee had so far arranged.



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Dannevirke Y.F.C.

Field Day

THE Dannevirke club held a most successful field day on Mr. W. Edgcombe's "Mana" Stud Farm at Umutaoroa. An invitation was extended to members of the Farmers' Union and all other interested persons, the result being a total attendance of 55. A welcome was given to the visitors by B. Ellingham (Dannevirke club chairman), who made special mention of a carload of Y.F.C.

members from the Mangatainoka-Pahiatua club.

The first demonstration was given by Mr. R. J. Macdonald on the working of a sheepdog. This proved an eye-opener to many and of interest to all. Among other items, Mr. Macdonald showed a dog under proper command, and then let loose an unbroken pup for comparison. The next subject was the Southdown sheep, and Mr. C. R. Edgecombe gave the demonstration on a stud ewe hogget. Afternoon tea then followed, kindly supplied by Mrs. Feierabend and Miss Mackenzie, and served in the paddock to save loss of valuable time. Mr. R. J. Macdonald then took the Romney sheep as his subject, and demonstrated on a dozen stud ewes and one ram. The final demonstration was given on the Aberdeen Angus cow by Mr. R. Edgecombe, a quiet stud cow being held in the ring for the purpose.

The field day concluded with a vote of thanks to Mr. W. Edgecombe for the use of his property, and to the demonstrators for the valuable information they had imparted and the time they had devoted to preparing and giving the demonstrations. A special vote of thanks was accorded the ladies for supplying the enjoyable afternoon tea.

J. L. SUNDERLAND,
Hon. Secretary,
Dannevirke Y.F.C.

Mid-Canterbury District Y.F.C.

Debating Competition

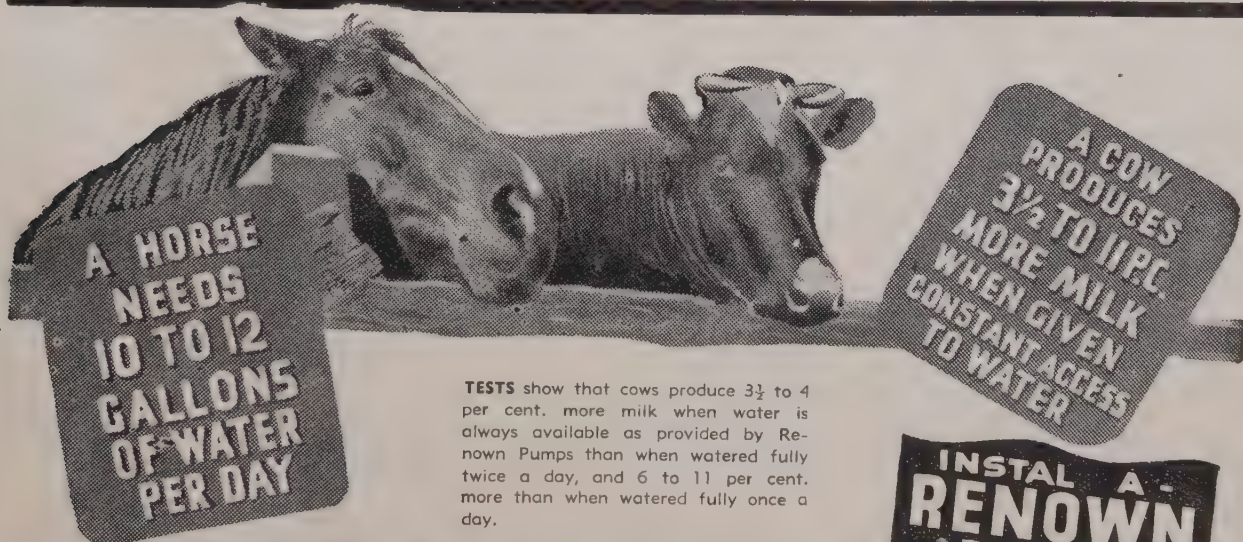
THE Mid-Canterbury Young Farmers' clubs annual inter-club debating tournament was held this year in Ashburton, and was won again by the Hinds club, which club thus retains the Ashburton Rotary club's trophy for another year. The subject of the debate was "That present day methods of farming are detrimental to the land." The Hinds club, which supported the affirmative, was represented by W. Taylor (leader), D. Chisnall, and J. R. Cocks; the Methven club team (negative) consisted of R. Wightman (leader), J. McKendry and A. McKay. The Hinds team was awarded 253 points, and the Methven team 223 points. A friendly debate on the subject "That increasing industrialisation will force New Zealand farmers to revert to the British policy of mixed farming," took place between the Methven club's B team and a team from the High School debating club, the debate being won by the latter. The High School team, which supported the affirmative, consisted of G. Smith (leader), I. Mc-

Gregor and R. Taylor, the Methven B team being D. Campion (leader), Stone and Limbrick. Mr. S. W. Gower, who kindly acted as adjudicator, congratulated the members of all the teams on the very high standard of debate, and gave it as his opinion that the performance of the Hinds team was as good as had been heard in Ashburton for some considerable time.

Mr. A. A. McDonald, in presenting the cup, on behalf of the Rotary club, to W. Taylor, leader of the winning team, expressed the hope that in the near future there would be seven or eight clubs competing in the contest.

Mr. E. Rhodes, chairman of the Mid-Canterbury District Committee, acted as chairman, and Mr. A. G. Rawlinson as timekeeper. Supper was handed round at the close of a very enjoyable evening.

—S. WATSON, Hon. Secretary,
Ashburton Y.F.C.



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Reports on Club Activities

WESTERN SOUTHLAND.

Dipton.—Resignations of J. Crawford (chairman) and A. W. Mayer (treasurer) accepted with regret; the former is leaving the district and hopes to attend Lincoln College at a later date. Appreciation of the splendid work done for the club by the retiring office-bearers was endorsed by all present. W. King was unanimously elected to fill the office of chairman, and it was agreed that the present secretary, D. B. Miligan, should undertake the dual position of secretary-treasurer. Three new members were enrolled. A team was selected to debate with the Farmers' Union at the next meeting, the subject of the debate to be "That the Farm is An Ideal Place to Bear a Family." There was an attendance of eleven members out of a total of nineteen.

Orepuki.—One new member enrolled. Arrangements finalised to enable members to travel to Invercargill to take part in the forthcoming field day and debate. Suggested that soldiers in district at present on furlough from the Middle East be asked to attend the next meeting and relate some of their experiences. Portion of travelling expenses paid to members who travelled to Dunedin to attend recent Council Meeting. Short speeches given by various club members. Lengthy discussion on Y.F.C. national essay competition. Minutes of District Committee and the Otago-Southland Council meetings discussed, and also the report of the Council Executive. Fifteen members present out of total of thirty-three.

Woodlands.—Arrangements for a field day at the local linen flax factory; also a dance the following week. Two teams selected to take part in the annual debating contest to be held at Invercargill. A. S. Trotter and K. J. Hargest gave interesting reports on the annual general meeting of the Federation held

at Palmerston North. Talk by Mr. Gibson Smith on "The Care and Treatment of Ewes and Lambs at Lambing Time." Eight members present out of a membership of fourteen.

Wyndham.—Team selected for debate. Question box evening. Twelve present out of fourteen.

SOUTH OTAGO.

Clutha Valley.—Business meeting. Decided to make up a football team and challenge the Clydevale linen flax factory. Fifteen members present out of total of twenty-two.

Milton.—Annual meeting. Officers elected: Advisory President, Mr. A. B. Stewart; chairman, R. G. Robinson; deputy chairman, L. C. Allison and C. Tweedie; secretary, A. T. Allen. Challenge accepted from the Farmers' Union for a debate; team selected, C. Tweedie, R. G. Robinson, A. T. Allison, and A. Somerville. Mr. U. Walker (Bruce County Clerk) gave a lecture on "County Affairs"; in his talk the speaker touched on the rating system. There was an attendance of ten members out of a total of seventeen.

Warepa.—Reports by three club delegates to the South Otago District Committee meeting. Visit arranged to Benhar Pottery Works. Secretary instructed to write to Rabbit Board, Dunedin, for full information regarding taxes and levies on proceeds from sales of rabbit-skins. Mr. J. B. Cook, Tolro, spoke on "Trapping and Skinning Rabbits"; he also dealt with the cleaning and stretching of the skins, and related his recent experiences in poisoning rabbits. A general discussion then took place on the poisoning of rabbits with strychnine. Ten members present. At the previous meeting eleven members attended; a report was given by L. Christie on the visit by club members to the South Otago Freezing Works and the linen flax factory. Mr. A. J. McD. Millar, River Trust engineer, spoke on "Soil Erosion"; the seriousness of the advance of erosion in New Zealand was stressed, the speaker stating that, apart from winning the war, the soil-erosion problem was the most important one confronting the Government today. The local Public Library took a new lease of life when the new librarian, a club member, issued books to members after the meeting. Due to the initiative of the club members, the library has been transferred from the school to the hall and reopened. It is intended to procure some new books when sufficient funds are available.

DUNEDIN.

Palmerston.—Lecture by Mr. S. H. Saxby, Department of Agriculture, on "Eye-spot in Wheat." Attendance of nine out of eighteen.

West Taieri.—Two new members enrolled. Y.F.C. badges procured and distributed to members. Letter received from the advisory president of the Mosgiel District High School Y.F.C., asking for assistance with the newly-formed club. Lecture by Mr. A. Millar on "The Care of the Ewe at Lambing Time." Sixteen members present out of a total of seventeen.

SOUTH CANTERBURY.

Fairlie.—The meeting took the form of an open one to all farmers in the district, the secretary, B. J. O'Neill, presiding. Messrs. Bevan and McLean, of Lincoln College, addressed the meeting; Mr. Bevan spoke on "Plant Research" and the work of the college, and Mr. McLean on "Veterinary Problems." At the previous meeting arrangements were finalised for the proposed tour by the Lincoln College lecturers. A very interesting address on "Potatoes" was given by Mr. A. J. Salt, a local farmer. Ten members were in attendance out of eighteen.

MID-CANTERBURY.

Methven.—Three new members enrolled. R. Wightman (chairman), A. McKay, and J. Watson were appointed to make necessary ar-

rangements for the stock-judging competition. A. McKay gave reports on the monthly meeting of the A. and P. Association, and the meeting of the District Executive Committee. It was decided that two debates be held against the Darfield club at the next meeting, the subjects being "That a Post-war Policy of European Immigration would be in the best interests of New Zealand," and "That World Free-trade Would be Beneficial to New Zealand." The usual mock meeting took place. Mr. Penrose, of Leeston, gave a very interesting talk on "Bee-keeping and Bees Generally." Twenty-seven members present.

CHRISTCHURCH.

Ellesmere.—National Y.F.C. essay competition discussed. Decided to hold another dance to raise funds for Xmas parcels for members overseas. Mr. C. Howe, Consulting Officer, New Zealand Dairy Board, gave a talk on "Diseases in Dairy Cattle," dealing mainly with mastitis. Seventeen present.

Darfield.—Arrangements for club ball. Debate to be held with Methven club, subject, "That a Post-war Policy of European Immigration Would be in the Best Interests of New Zealand." Debate to be held at Methven.

NORTH CANTERBURY.

Seargill-Omihi.—Discussion on the means by which the club could bring to public notice the growing menace of nasella tussock. Letter to be written to the County Council urging that nasella tussock be declared a noxious weed. Preparation for field day to be held in October. An address was given by Mr. S. E. L. Roberts entitled "The Future of the Country and the Duty of the Young Farmers." Twenty members present.

MANAWATU.

Bunnythorpe.—J. Wood selected as acting-chairman. Arrangements for the sending of parcels to members overseas. Discussion on Y.F.C. section at the Women's Institute show; decided that the exhibit be made more comprehensive. A. Slack to be acting-chairman at the next meeting. Extract from the Y.F.C. Constitution read by T. Hyde; B. Neylor selected to read a further extract at next meeting. Letter of condolence to be sent to the family of the late Air-Gunner Norman Maul. Address by Mr. Hewitt (Massey College) on "Sheep Farming." Eleven members present.

Rongotea.—General business. Church parade to be held on October 3 at Rongotea Methodist Church. Rev. Gould to be speaker at next meeting. Address by Mr. Roberts on "Farming in Relation to Public Health." At the previous meeting W. M. Hunt was appointed to the position of hon. secretary. Mr. R. O. Gloyd selected to represent the club on the Feilding A. and P. Association. The meeting then adjourned to enable members to attend the W.D.F.U. meeting, where a lantern lecture on "Vegetable Production" was given by Miss Cocks-Johnston. Attendances of eleven and sixteen were recorded respectively at the two meetings.

SOUTHERN HAWKE'S BAY.

Mangatainoka.—Annual meeting. Officers elected: Advisory president, Mr. F. E. Ward; chairman, I. Algie; secretary and treasurer, H. Bairstow; vice-chairman, A. Bolstad; hon. auditor, Mr. R. P. Boagie; committee, club officials, with addition of K. Pryde, E. Bryant, J. Cotter, W. Reichenbach, and J. Moynahan. Eight members present. This club has revived its activities after being in recess for over a year; the members generally are determined to make every effort to carry on.

WAIRARAPA.

Alfredton.—Address by Mr. J. L. Heckler on "Farming in General"; the speaker dealt with some very interesting features, including the origin of the horse and other domestic

Methven Y.F.C.

Annual Dog Trials

THERE was a good attendance of members at the Methven Y.F.C. annual dog trials held recently on Mr. R. J. Low's property. There were thirteen entries in each of the two competitions. The winners in the first event, "head and long pull," were: A. Molloy's "Tip" 1st; I. Wilson's "Tyke" 2nd; M. Poff's "Bob" 3rd; J. Watson's "Darky" 4th. The awards in the second event, "driving," were: A. Molloy's "Tip" 1st; T. Wilson's "Scot" 2nd; J. Watson's "Darky" 3rd; T. Mangen's "Mack" 4th. The dog gaining the most points for the day was A. Molloy's "Tip," whose owner received the Young Farmers' Club Cup, valued at 5 guineas, and Mr. A. G. Rawlinson's miniature cup, valued at 25/-. J. Watson's "Darky" was the runner-up. The special prize donated by Mr. J. E. Harris for the best management of a dog was awarded to A. Molloy. Donations towards the other prizes were received from Messrs. L. L. Richards, A. F. Marr and R. J. Low. Mr. C. Cran kindly acted as judge. A very enjoyable afternoon tea was supplied by Mrs. Low, with the assistance of other ladies.

—J. A. WATSON, *Hon. Secretary, Methven, Y.F.C.*

HE WENT FORTH



EIGHTH SERIES.

ARMY.	
Name:	Club:
Ammundsen, F.	Mangatainoka
Armstrong, B. R.	Te Puna
Blenkhorn, R. C.	Levin
Bliss, C. . .	Carterton
Bowen, W. H. . .	Bulls
Bremmer, T. . .	Cambridge
Briggs, L. . .	Amberley
Brooks, T. E. M.	Ellesmere
Brown, J.* . .	Mangaweka
Bullock, J. H. . .	Enfield
Campbell, J. E. . .	Kati Kati
Cooper, L. . .	Amberley
Cotter, G. . .	Mangatainoka
Davenport, O. . .	Mangatainoka
de Pass, P. . .	Teddington
Donald, J. . .	Amberley
Fisher, C. . .	Cambridge
Flanagan, D. G.	Mangaweka
Forbes, B. . .	Mangatainoka
Gee, L. P. . .	Seddon
Gibson, A. E. . .	Te Puna
Graney, N. . .	Cambridge
Heslop, W. M. J.	Ellesmere
Horn, A. . .	Levin
Hulena, B. . .	Mangatainoka

Name:	Club:
Hunt, D. . .	Mangatainoka
Hyde, J. . .	Cambridge
James, I. . .	Amberley
Johnson, F. R. . .	Darfield
Johnston, J.* . .	Mangaweka
Jones, J. M. . .	Kaukapakapa
Kerrison, R. . .	Mangatainoka
Klatt, J. S. . .	Bulls
Knutson, M. E. . .	Carterton
Lane, L. F. . .	Clevedon
Last-Harris, S. H.	Bulls
Lemon, W. K. . .	Ellesmere
Lilley, C. F. . .	Ellesmere
Lindsay, C. . .	Amberley
MacAulay, A. L.	Darfield
McGiffert, L. . .	Amberley
McKee, J. . .	Seddon
McLachlan, W. G.	Ellesmere
Moynahan, J. . .	Mangatainoka
Muir, K. . .	Clevedon
Ordish, A. J. . .	Carterton
Orr, T. K. . .	Carterton
Peachey, A. L. . .	Bulls
Pearse, K. . .	Mangatainoka
Phipps, R. . .	Te Puna

* Prisoner of war.

Name:	Club:
Rowe, D. . .	Amberley
Rowley, R. . .	Mangaweka
Shaw, P. . .	Cambridge
Smith, A. C. . .	Palmerston
Smith, G. B. . .	Mangatainoka
Smith, K. . .	Amberley
Somerville, W. A.	Kaukapakapa
Stringer, E. . .	Amberley
Turnbull, J. . .	Amberley
Turner, E. . .	Cambridge
Tweedy, D. N. . .	Ellesmere
Wagner, B. K. . .	Ellesmere
Waldman, R. . .	Mangatainoka
Wansborough, M.	Mangatainoka
Wornall, G. . .	Amberley

AIR FORCE.

Name:	Club:
Chambers, C. A.	Teddington
Croft, L. . .	Amberley
Drummond, M. . .	Five Rivers
Jurgens, T. C. . .	Bulls
Lancaster, T. H.	Levin
Murphy, J. W. . .	Mangaweka
Page, G. . .	Amberley
Todd, C. S. . .	Ellesmere

NAVY.

Name:	Club:
Renton, D. . .	Clevedon

animals, drenches and their effectiveness, and points to be considered in buying a farm. There were nine members present at the meeting.

Carterton.—Report on recent dance received; the dance was a great success, both socially and financially. Discussion on Y.F.C. national essay competition. Three new members enrolled. Decided to hold the next meeting as a question evening. Talk by Mr. S. Knutson on "The Art of Breeding in Dairy Cows." Twenty members in attendance.

Masterton.—Final arrangements for a dance. One new member enrolled. The Dominion President's report was read and discussed. Archdeacon E. J. Rich gave a very interesting and informative address on "Citizenship." There were twelve members present. At the previous meeting there was an attendance of

32 out of a total membership of 46. All members present contributed to the discussion on "Ram Inspection at Ram Fairs"; L.A.C.'s Cooper and Green (club members from Gisborne and Canterbury respectively) judged the discussion.

TE KUITI.

Otorohanga.—Discussion on admitting town youths to the club. An interesting demonstration was given at Messrs. Lear and Costley's garage by Mr. J. Anderson, foreman mechanic; the demonstration included the working and explanation of the shop testing devices, and the maintenance of petrol engines and the care of tyres. There were seventeen members present out of thirty-one.

Paewhenua.—General business. Prepared speeches given by new members. Mr. Mc-

Adam to be asked to speak at the next meeting. Twelve members in attendance.

BAY OF PLENTY.

Te Puke.—Talk by P. Nichol on the inter-club football tourney held recently at Taunanga. Donation of £3 to be given to the District Committee funds. Talk by Mr. Foskett, Dairy Inspector, on the preservation of milking-machine inflations by the caustic soda process. A debate for junior members was held.

Waimana.—Annual meeting; twenty-four members present. Officers elected: Advisory president, Mr. N. J. C. McDonald; chairman, R. L. McDonald; vice-chairman, J. Warren; secretary, Graham Wardlaw; treasurer, L. Bell. This club, after having been more or less in recess for a period, has been revived, the members showing keenness to carry on.

Health Notes for the Farm.

What Do You Know About Tuberculosis?

IF INDIVIDUAL members of the public viewed the tuberculosis evil with the same gravity as the Department of Health, then we might get somewhere in our fight against it. As it is, we have in New Zealand at present 10,000 cases of tuberculosis. And that is exactly 10,000 too many.

What are you going to do about it?

It is a serious fact that tuberculosis—it was commonly called "consumption" in the old days—remains one of the prime causes of death and debility in this country, and a special effort has been made by the Department of Health to wage a planned war against it. This has now culminated in the establishment of a special division of the Department which will concentrate on an offensive against tuberculosis on a scale never before envisaged. **This is where you—the individual—can come in.**

If the general public co-operated wholeheartedly with the Government in its efforts to check the disease then the battle would be more than half won. In short, the backing of the people is needed, but first of all, the people need to know some of the important elementary facts about tuberculosis.

Contributed by the
DEPARTMENT OF HEALTH

Nature of the Disease

Probably the most elementary and certainly one of the most important first facts they should know is that tuberculosis is **not** hereditary—it is not handed down as a matter of course from parents to offspring, just like the colour of the hair or the shape of the nose.

Tuberculosis is catching. It is caused by a germ that passes from person to person. Appreciation of this point will do much to dispel wrong ideas about tuberculosis.

What are suspicious signs? If you know the outward signs, it is valuable in helping you get early diagnosis and early treatment. Tuberculosis, if treated soon enough, can be cured. That's something else you should know. Suspicious signs are: Chronic tiredness, loss of weight, persistent indigestion, a cough that hangs on.

The pathetic feature about tuberculosis is that much of it can be prevented by ordinary care and the simplest of precautions. Too many people are apt to panic at the thought of it. It scares them; they think it's something disgraceful and unclean. Those are the people who are holding back the efforts to beat it.

As a matter of fact, most people, by the time they have reached adult years, have been infected with tuberculosis of the lung. And they did **not** inherit it—they caught it, in the same sense as they may catch any other infectious disease. Fortunately, the majority of people have sufficient natural resistance to overcome the infection, but the vicious little germ that tries to eat its way into the delicate tissues of the lungs is still there, alive, but imprisoned by protective cells, and ready to start its deadly work the moment the bodily resistance weakens.

Detection by X-Ray

By simple tests, and with the aid of modern X-ray equipment, the Department of Health is tracking down tuberculosis subjects. The X-ray method is one of its most valuable aids in detecting tuberculosis, and in this respect the Department has the willing co-operation of most of the hospital authorities. The tests cost nothing, and, if taken in time, they may save life.

The Department is extremely thorough in its efforts to assist the community. Once a case of tuberculosis is located the first concern of the Department's field officers is to see that the patient receives proper hospital or sanatorium treatment. Then they check up on the patient's family to see whether any other members have been infected or if the source of infection is a member of the family.

There is an understandable reluctance on the part of some people to undergo examination. It springs from a fear of the consequences. In the case of tuberculosis—and this applies to other diseases as well—you either have it or you don't. If you have it, and know in time, then some adjustments in your routine are all that are necessary to help you fight it.

It is well for everyone to remember that tuberculosis can be cured, provided it is caught in time. All the Department asks you to do is to help them help you. If you think you have it, if you are in constant contact with cases, get yourself examined. You owe it not only to yourself to do so, but to the community at large.

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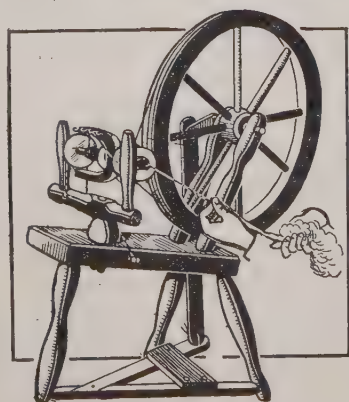
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ARE you two-faced? Be honest now, and think well before you reply. And no, don't rush off to the nearest mirror to see if you will find the answer reflected therein—you won't. You will have to search further than that to find the answer to my question. You will have to search deep down into the secret recesses of your soul and think well before you are quite sure that your answer, be it in the negative or the affirmative, is really honest.

Perhaps I had better explain myself a little more. I believe that very nearly all of us are two-faced—that is, we have a sweet face and a sour face. There are many causes that contribute towards giving us these two faces—circumstances, events, our health, what we are doing, those around us. Now if you are honest, your answer to my question will be that you ARE two-faced, but that is no disgrace. The point is this: which face do you wear most? That is the real question that you have to face up to answering. And remember here, "If your face wants to smile, let it smile. If it doesn't, MAKE it."

So many people seem to delight in wearing their sour face for their family, and the other face, sweet-as-sugar, is only worn like a best frock, when the visitors come. Don't you agree with me that your family is the most precious possession you have, and as such should be accorded the best treatment? In this case they deserve the sweet-as-sugar face always. I know there are times when even the best of us become harassed and worried, and so immersed are we in our own worries that it gives the sour face an excellent opportunity to slip in unnoticed. You must guard against this—the sour face is rather like the devil, always waiting his chance to put one across the sweet-as-sugar face as it were. And if you feel really that it is time the sour face had an airing for a while—and a change always does you good—then follow the advice contained in one of the rules of the late King George: "If I am called upon to suffer, then let me be like a well-bred beast that goes away to suffer in silence."

Be Honest Now

Next time you want to wear your sour face, don't inflict it on others, the family least of all. Instead go away in the quiet for a while until your sweet face is back with you. And the next time you are tempted to say a cross word, pause for a moment and think first whether or not it will give that sour face a chance to be worn again.

I think B. Chapman knew what he was writing when he wrote, "The God to whom little boys say their prayers has a face very like their mother's." Remember that, tired mothers, next time you feel tempted to be cross with your kiddies, however aggravating they may be. The fault may be with you, not entirely with them.

And, in closing, one last thought:

"Life is a mirror:

If you frown at it it frowns back,

If you smile at it, it returns the greeting."

So remember always to keep the sweet face turned to the outside.

Mary

Thoughts in Springtime

IT'S a lovely morning after the wild, stormy weather we have had. Torrential rain, the wind, and the snow in the back country caused us some anxious moments on account of the animals forced to be out in it all without much shelter. I think I could enjoy these tempestuous pageants Nature occasionally puts on for us if it were not for the thought of the animals who have to endure the wet and the cold with less to eat than in the good weather. But I believe we, and others, too, got through with less

loss of stock than might have been expected, and now the sun is shining again, most of the snow has disappeared from the hilltops, spring flowers are out again, and the birds are trilling as though there never had been such a thing as a storm.

I always think of spring as the magic time of the year. In spring-time anything can happen: one day we have a dead-looking, leaden sky, a dull, cold, grey world with silent birds and subdued animals, and our spirits bowed down with the weight of several lifetimes as it were, then without any warning one day we wake up to find a brand new world around us! The sky seems bluer than ever before, the grass greener, and a few of the braver flowers are out nodding and gossiping with each other as though this was the very first time spring had ever occurred. The trees put on their newest outfits, and the birds twitter gaily and frivolously to each other, discussing their plans for next season's housekeeping. While I have been writing this, with the sun on my back, and the gentlest of spring breezes on my face, a thrush has landed not far from my feet, and down on the little pond Peter and Elsie, our two Paradise ducks, "who come year by year to the same spot, when family ties call them," are chattering with delight at something they've found, or perhaps it is because of the latest "duck" joke that Peter has just told Elsie. I wish I knew just what they do say to each other when they sit side by side on the edge of the water chattering for all they are worth. Lovely things, they too are part of the golden day of magic.

The floor is not yet swept, nor are the dishes done, but I am glad nevertheless that I have stolen a piece of the morning, before I begin the day's work, to say "How do you do, you brave new spring day?" And God grant that some day very soon now we will be saying good-day to a brave new world.

—Jonathan, Marlborough.

**To You
busy
Housewives**

*who can't
do without
your*

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Urlwin's promise that, come what may, they will do their utmost to see that you continue to get spare parts for your Speedee Appliances. If your dealer can't supply (by the way, don't be too hard on your dealer, these days there are often unavoidable delays in delivery), write direct to H. C. Urlwin Ltd., Christchurch, who will arrange for you to be supplied through your dealer.

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H. C. URLWIN LTD.

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This has been a really useful competition, and perhaps you will gain a few bright ideas from the entries printed below. Most of you agree that it is a question of planning each day the night before, and of bringing the children up to lend a hand wherever possible. First prize this month goes to "Cockie's Wife," of Motueka, with "Bonanay," Kati Kati, second. Now go ahead and read how these two women have rearranged their household duties to make time to help with the farm work.

First Prize

THE most important step is the preparation the night before. All the children's clothes are left ready, and the bigger ones see to their own; the table is set, fire laid, etc. It takes only a few minutes when morning comes to make the pre-soaked porridge, stoke up the fire and so on before going to the cowshed. The children make the toast and prepare their own lunches—I leave suitable fillings (washed lettuce, radishes, etc., and a tin of cookies) on a side table, and usually cut the bread while the fire warms up and the kettle boils for the pre-milking cup of tea.

We have our hot dinner before going to milk in the afternoon. This means that the children do not fill up on cakes when they come home from school, but receive the full benefit of their hot meal. It also leaves me more time after milking, as instead of having to rush round and get a hot meal dished up, a drink of milk or cocoa with something light to eat is all we need.

I find it saves time not to have a heavy washing and ironing day. It is easier to wash out a few things every day as they are soiled, rather than have an accumulation of coloured clothes on washing day. I leave all the boiling things till the Monday, and with the copper fire set over-

night, and one of the children stoking it while I am at the shed, I get the clothes out comfortably in the morning, and also mop the verandahs with the hot suds—no more scrubbing for me, since I find hot suds and a mop do the job in a few minutes, and just as well too.

Tuesday morning I usually find time to do enough cooking—two or three large batches of cakes and biscuits—to almost last the week, although I often cook some more about Friday to have a freer weekend.

In the busy seasons I manage to squeeze in quite a lot of help outside through the day, but in the slack times I manage on Wednesdays and Thursdays mostly to get some sewing or mending done (it pays, too, not to let this accumulate) and also manage quite a good vegetable and flower garden.—**Cockie's Wife, Motueka.**

Second Prize:

THE family must be fed, clothed, and comfortably housed. That essential work must go on all the time, so that there can be no great alteration in the work, merely a simplification of it. Already wartime shortages and high prices have effected much simplification. There is no excuse now for spending long hours in the kitchen, cooking rich and unwholesome cakes. Meals can be

simple without detriment to our health. Plain, wholesome foods take less time to prepare than rich cakes and puddings. Scrub the potatoes, cook the pumpkin in its skin, eat bread and butter, cheese and lettuce, and not so much jam, which entails endless hours over the kitchen stove. Put away starched clothes for the duration. Instead paint your dining-table some gay colour. It is easily wiped over. Do not spend precious time polishing linoleum; dissolve the polish in hot water and wipe the floor with a mop.

Get the family to join in this programme of simplification. Let them see how little work they can make

Competitions

October:

How you are going to enjoy this competition—already I have received many good entries, and it just goes to show that your gardens mean a great deal to you in these days of wartime worries. Remember the subject: "What my garden means to me." And the entries close on November 15th, so be in time.

November:

Do you remember, when you were very young, that first day at school, or the day you first found a frog and held it in your hand, or —? Well, there are so many memories that date back to childhood days that I think we would enjoy sharing them. So next competition is "Childhood Recollections," and do try and send in just one really outstanding recollection. This competition closes on December 15th, and the two prizes are 10/- for first, and 5/- for second.

"MARY,"

C/o. "Journal of Agriculture,"
P.O. Box 3004, Wellington.

for you, not how much! Train the children to be methodical and independent, and you will find you will be spending a lot less time indoors.—**Bonanay, Kati Kati.**

YOU ask what I am doing, Mary, to help with the farm? Well, I am trying to run it, and keep it so we can get into full production as soon as Hubby returns, for it is in the first years after the war that we will need all the produce, etc., that farms can produce. This is how I plan my work. I get up earlier and go to bed earlier, for I must keep fit. I get up in the dark, and do what housework I can without disturbing the rest of the house, then instead of the early morning cup of tea I have breakfast at daybreak—about a-quarter to seven these days. Then I go and milk, feed calves and fowls, and separate, and

come back to the house, where I get my work done by eleven o'clock—morning tea time. I then go outside and do what I can round the farm, have an easy lunch, and in the afternoon, while I go round the stock, I collect wood for the sitting-room fire. Afternoon tea comes next, then the vegetables are prepared, and back to the shed again. This is how I organise my family—three children, aged seven, six and four. Each night I write a list to send to daddy of all that they have done during the day, which is a big spur to them. Then they are all allowed to help with the work, and also have their own set jobs about the house which must be done.

I try and get into the township one day a week, and I frequently ring up

my best friend, although it is a toll call, for a talk to her is as good as a tonic. I have no time to help patriotically, but I give sugar and eggs to the organisers to be distributed so that others can do the cooking. And that is the extent of my "war effort."
—Q.W.E., Coromandel.

IF it had been suggested to me before the war that I should put through so much work in a day, I should have replied, "Impossible." I had a birthday shortly after war broke out, and was promised a car which I could drive, and so get about more. However, before I was able to get to town to purchase my car I had an idea. I decided to have a tractor and plough, and so do my share towards increased production, and perhaps

later earn myself a car as well. This I did, and besides spending long hours on the tractor, and sometimes going out to work again in the evening, I helped to milk the cows, roll the fleeces at shearing time, and keep the kitchen garden going. Besides this, I had no help at all in the house, and had lunches to cut for the children going to school, all the meals and housework to do by myself—and ours is a large house and I am very house-proud. In twelve months I knitted over 100 skeins of Red Cross wool, and kept up our own woollen garments. Last year, at 40, and after a long spell, I presented a son to the nation, so now I feel I could do with four legs instead of two, so I could move faster and do all I would like to do.—Kit, Nelson.

RAINSTER ON ACTIVE SERVICE

Smart? Yes, Rainsters are smart. Perhaps you've had difficulty in getting your smart Rainster—for even in your civilian war job: industry, E.P.S., canteen work, you still like to look smart.

But Rainster is on active service now. And you know how it is, the Services must come first; and the demands of the Red Cross Transport, W.A.A.F., W.R.N.S., and Navy take most of the output of Rainsters from Rainster House, the smart home of Rainsters. Every hour, every day, week, month, more and yet more, and still more Rainsters for the Services—and every one a smart Rainster. So if you can't get your civilian Rainster . . . too bad; but you'll understand, you'll see how it is—the war must be won.



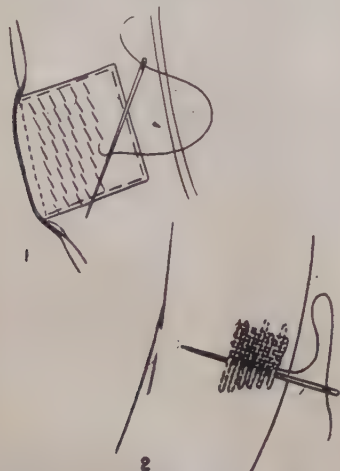
MENDING MEN'S SUITS



I KNOW from letters I have received that hundreds of readers are making good use of the hints in this series of articles. Are you doing the same?

To Mend a Thin Elbow.—Cut a piece of cloth or rayon lining large enough to cover the underside of the entire thin spot. Baste in place.

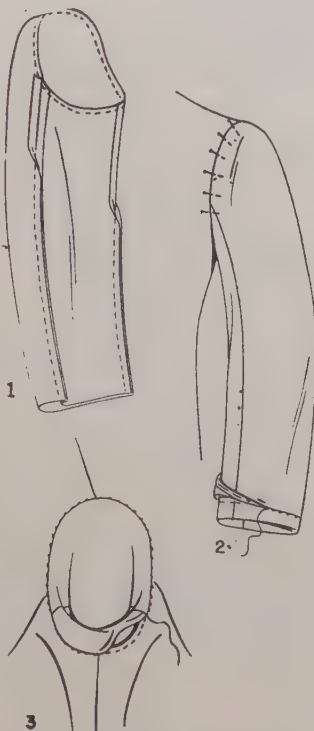
1. Tack with rows of loose tailor's basting. Make the rows of basting parallel to the lengthwise grain of the cloth, about one-half inch apart—closer where the cloth is very thin.



2. From the right side, darn with sewing thread that matches or is slightly darker than the material. Darn in line with the yarns in the cloth both lengthwise and crosswise and let each stitch catch through to the piece of cloth underneath.

To Reline Sleeves.—Rip the sleeve lining apart from the coat at the armhole and the cuff. Pull out the loose threads that tack the seams of the lining and the coat together. A sleeve has two seams, because most men's coat sleeves are made from two pieces. Rip open the seams of one sleeve lin-

ing—the least worn—or cut exactly on the stitching lines. Press each of the two pieces so that they may be used as patterns in cutting the new linings. Shrink and press the new lining material unless it is known to be pre-shrunk.



Before you cut, compare the size of the old lining pieces with the measurements of the coat sleeve. It may be that the rayon in the old lining has shrunk so that the new lining needs to be cut a bit larger. If so, make the

allowance for shrinkage; then add about five-eighths inch for seams, and 1 inch or more as turn-up at the cuff.

1. Seam the lining. Press the seams open. Stitch by machine around the top of the sleeve, slightly less than the five-eighths inch allowed for a seam. This will hold the edge firm as you turn under and baste the five-eighths inch allowance. Press.

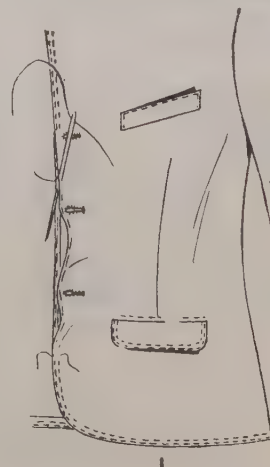
Turn the coat sleeve inside out. Pull the lining over it. Turn up and baste the amount allowed at the lower edge. Pin in place around the cuff.

2. Slip stitch to the coat. As you pull the lining up towards the armhole, tack lining and coat seams together at the back of the sleeve with loose basting stitches.

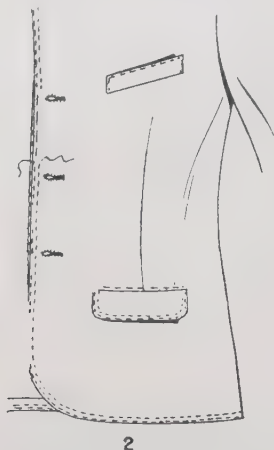
3. Fit and pin the lining smoothly around the armhole. Finish neatly with small stitches.

Worn Coat Edge.—Pick out the machine stitching a little above and below the wear. With tailor's chalk strike a line for a new edge that will take off all the worn part but still keep a straight front edge.

1. On this new line turn in both the coat front and its facing. Baste each



side as you turn it in. Pin, then slip stitch the coat front and facing together. Baste to hold edge firm for machine stitching, then press.



2. Stitch on the coat edge by machine exactly as it was originally. Let the new stitching join with the old so that it is not noticeable.

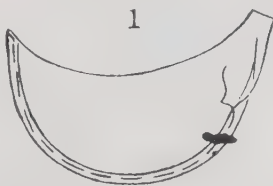
Lumpy Coat Hem.—Sometimes lumps of lint collect in the corners and lower edges of the coat. Unless you remove this, the cloth will get shiny and wear thin on these lumps, and it will be impossible to give the coat a flat, sharp press where this lint gathers. Instead, the hem will look rippled and lumpy.

Open coat hem at the lower edge. Scrape out lint and soil collected there. Resew.

Underarm Patches for Coat Lining.—If the lining at underarm is only slightly worn, put a shield patch over it. If it is so badly worn that you have to cut away some of the lining, seam in a patch. Sleeve linings also may be patched in these same ways.

Shield Patch.—Rip the sleeve lining apart from the coat around the lower half of the armhole. Make a paper pattern, shield-shaped to fit the underarm and to cover the worn place. Cut two shields—one for each side—from new lining material. Allow about one-

fourth inch around the outer edges for turning under and about one-half inch on the armhole edge for a seam.



1. Turn under the outer edge of each shield, baste, and stitch by machine.

2. Tack each shield in place to the armhole seam. Smooth to fit the coat, and pin or baste. With matching



thread slip stitch the shield to the coat lining. Sew the lining back in place and fasten off all threads.

Seamed-in Patch.—If the lining at the underarm is so worn that part of it needs to be cut away, seam in a patch. Rip the sleeve lining away from the lower part of the armhole. If it's the sleeve lining that needs a patch, it also may be ripped loose at the cuff and pulled inside out to make the patching easier.

With tailor's chalk, mark on the lining the part to be cut away, then cut.

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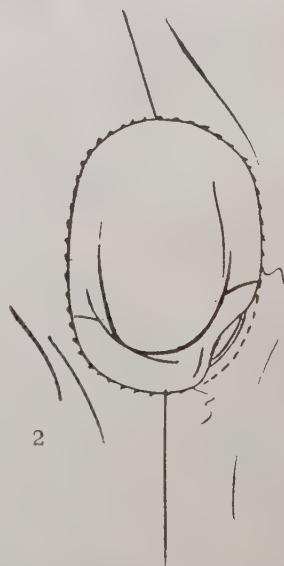
Wanganui.

Use this piece as a pattern for cutting the new patch. Allow twice the usual seam allowance on the edge to be sewed into the lining.



1. Baste and seam the new piece into the old lining. Press the seam.

2. Finish the armhole as it was at first.



This article, "Mending Men's Suits," by C. L. Scott and A. F. Hagood, is reprinted from a bulletin issued by the United States Department of Agriculture.
(To be continued).





Mary's at - Home -



TWO of my regular pen pals are home from the Middle East on furlough, and it is good to see them again after such a long time. That ship brought a bigger cargo of happiness to New Zealand than any ship has done for a very long time.—**Crossroads, Feilding.**

MY days are very full—I milk five cows, spin, knit, sew, and rear pups, chicks, and ducks. I am very keen on poultry and on gardening too. I have a pig, and of course a cat, and a cycle. I am especially fond of cooking, and my cupboard is always well stocked with jams, pickles, sauces, chutney, and preserves. Cooking is no bother to me at all—it comes just as easy to me as the rain comes here. I belonged to Hawke's Bay before we moved here.—**M.F., Tokirima.**

THIS garden is the barest I have ever seen, and my one comfort has been gorse—its perfume fills the house, and its thorns, my fingers, but it is worth it to look at Nature's gold. How I miss the flowers we had at Mt. Pleasant!

After six weeks' painting in my spare time, which is not much with two men and two boys to care for, I have got my house clean, and it is now a home. Years ago when we were house-hunting, we classed houses in three groups—homes, houses, and dwellings. So that when anyone came in after being out house-hunting the family knew just what sort of place they had just seen. This time not a room escaped my paint brush. I used gallons of paint, and to my mind the kitchen is the biggest success. It had a dingy brown paper, dirty white ceiling, and half-red mantelpiece and window

frames. I painted it all cream, the ceiling too, with red picture rail, and all the etceteras red too. I have a few flower pictures on the walls now, and figured curtains with red in them that make all the difference to the room. I light a huge fire in the sitting-room at night, and we roll on large logs, and have a roaring fire. The time I like best is when there is just a bed of embers, and I sit on the hearth and "find things in the fire." Do you in-

dulge in such childish amusements, Mary? I wonder.—**Biddi-Jan, Cheviot.**

MARY, because it is your birthday, we have gathered gifts from this day for you. For your comfort, a coat of lambs wool, a golden gown that is mimosa in bloom, and slippers of new green grass. For your adornment, a necklace of dewdrops, a girdle of blue that is a ring of hyacinths about a tree. For your house, Wedgwood blue plates which are periwinkles, and armsful of daffodils. For your uplifting, a snow-capped mountain and a poplar tree. For your wonderment, the whiteness of frost, the intense blue of a speedwell, the feathers of a yellow-hammer. For your delight, the morning song of a thrush, the all-day song of a grey warbler. And for your sleeping, a coverlet of dusk, and "a rain of stars."—**Tinkle, Tinkle.**



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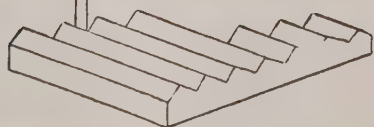
“Your labor is for future hours”

*Ye rigid ploughmen! Bear in mind
Your labour is for future hours.
Advance! Spare not! Nor look behind!
Plough deep and straight with all your
powers!*

And that is the duty of us all—to plough
straight and deep with all our powers. To
bring to every task in the fields, in the factory,

or in the home, a strong determination to work
for the happier world to come. To-day the
Onehunga mills are sparing nothing in their
efforts to weave for war, and that is why you
may not be able to buy your requirements of
Onehunga products. But the future hours will
surely come when our labour reaps its own
reward and the good things of life will return
in plenty. Among those good things will be
Onehunga Woollens, on active service again for
the comfort of New Zealanders.

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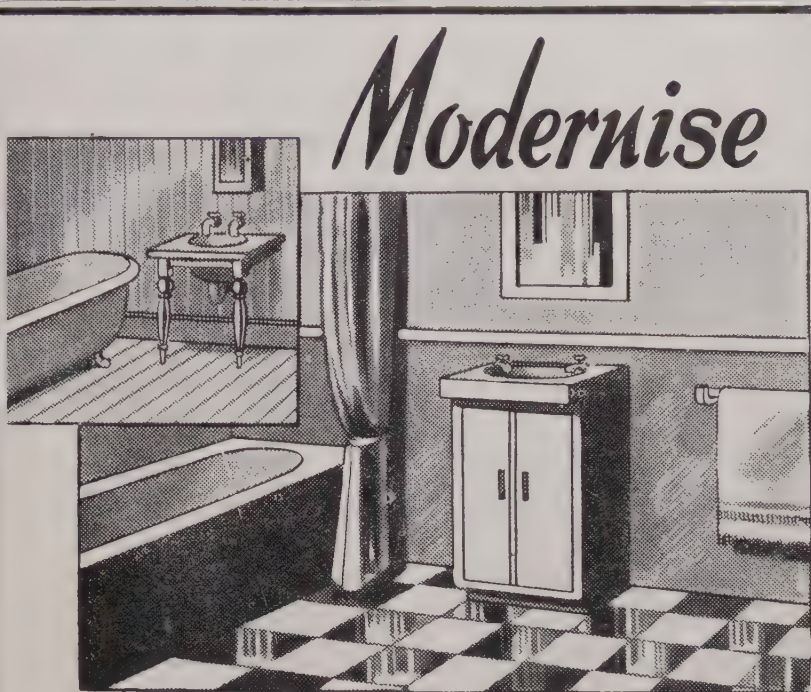
SPRING is almost here, but not quite, because of a late winter. Just imagine snow and hail in September, and me planning to spend hours in my garden tending to the wants of my leafy pets! And now there is a flood, with water everywhere, the very worst flood of the year. The tiny brown streams are raging torrents dashing past onwards to the sea, and the one that flows through the lawn no longer keeps to its limited space, but has spread in all directions. The weeping willow garden where daffodils grow wild is covered over with angry swirling waters, and the brave little spring flowers are somewhere in their depths. Line upon line like green soldiers are the bulbs in the bulb beds, and before the month is out I hope they will be a mass of beauty that one can stand and drink in after being without flowers for so long. All day the rain has poured down, Mary, and you will never guess what I have been doing! Reading your talks to us that I have placed in a book for my friends to enjoy. And I too have enjoyed reading them all through, sitting in front of a blazing log fire. Fancy, it will be three years in January since you first wrote to us, and asked us to share our joys and sorrows with you—I know our lives are richer because of your pages for us. Amongst your thoughts is this one—that we should gather nosegays of things that have made us happy during the day. My nosegay for today has been having a day inside, and doing just what I pleased: writing, reading, and weaving dreams in front of the fire; going for a walk in the rain and discovering where the flood waters poured through a fence into the big pond. Then I loosed my two sheep dogs for a run, and was thanked by the grateful looks in their faithful brown eyes. I am gladdened too by the thought that I had several rubbish fires last week—I love having them. Do you, Mary? Or perhaps you have not a big garden or wood heap like we have?—Peggy, Pleasant Point.

I HAVE just been listening to the Victory Bells. How thrilling and wonderful it seems to have got so far along the road to peace. I do hope all our dear soldier lads imprisoned in Italy will be freed. God has been very good to us, hasn't He? Just think of the hundreds of bright young lives that will be saved now.

What a lovely idea of yours, this cultivating friends as a hobby! I've often thought that if each of us took one returned soldier, one anxious parent, or one sad person, and made the life of that one person happier in the thousand little things we could do for them, automatically the grand new world of brotherliness would just grow. And by cultivating friends as you suggest we can all help in the big plan ahead.—**Tiggetty Boo, Kati Kati.**

I WONDER if everyone realises the value of lemon and orange trees? We have five lemon trees, three of which are of the Meyer variety, and the trees are simply laden. Plain lemon drinks without sugar are excellent for the kidneys, and my doctor told me they are unrivalled as a blood purifier. We are very fortunate in

having a sweet orange tree, and this year it was laden with large and very juicy oranges. The kiddies have had two a day each, and have been having them for the last two months or more—and you all know the price oranges are in the shops if they are procurable! So why not grow lemons and oranges for yourselves?—**Just Say, Pokeno.**



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* * *

Funnels made of stiff paper and in several sizes are invaluable in the kitchen for emptying cereals and other dry commodities into tins.

To remove dirt from coir mats which no amount of banging and shaking will dislodge, give them a regular hosing. Shake lightly to remove loose dirt, put mat on lawn or concrete footpath, hold nozzle close to the mat, and turn on a strong stream of water; turn mat over, repeat and leave to dry.

For your tennis tea, cover an oblong cake with pale green icing, stretch a piece of net across, and fasten with a toothpick each side, into the cake. Mark out the court in white icing, and put a racquet in deep cream icing at each end. Quite easy to do, and very effective.

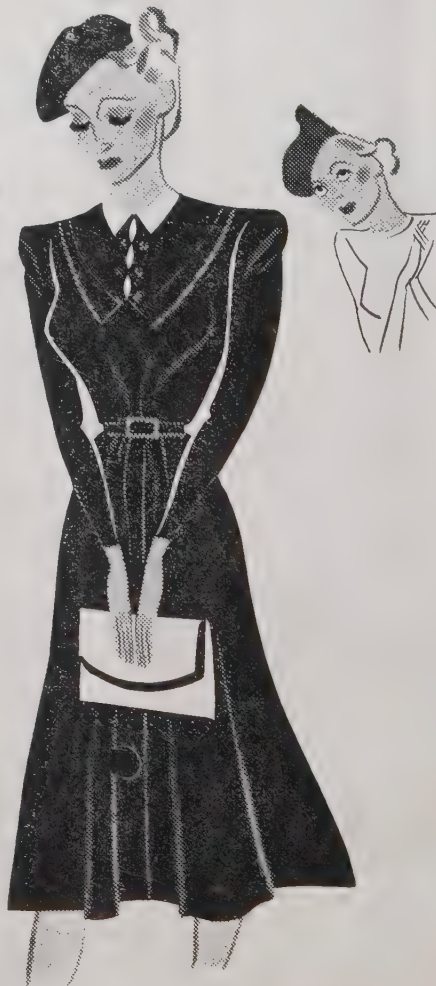
THE SAD CASE OF MISS X

Miss X came to buy a Berlei. The shop had nothing in stock for her figure type, but the new girl behind the counter was anxious to please, and showed her the next nearest fitting, and Miss X, in desperation, bought it. She never felt happy in that Berlei. She blamed the store, and Berlei, but actually she knew herself that it was not her fitting.

★ ★ ★ ★ ★

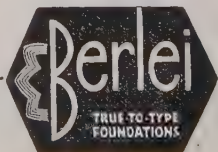
This sad story is too often enacted nowadays. Its moral is, don't ever buy a Berlei that's the nearest to your own figure type fitting. Better to wait, or at a pinch, better to shop elsewhere. Your own store would much prefer you to do this, rather than sell you a Berlei that can never be completely satisfactory.

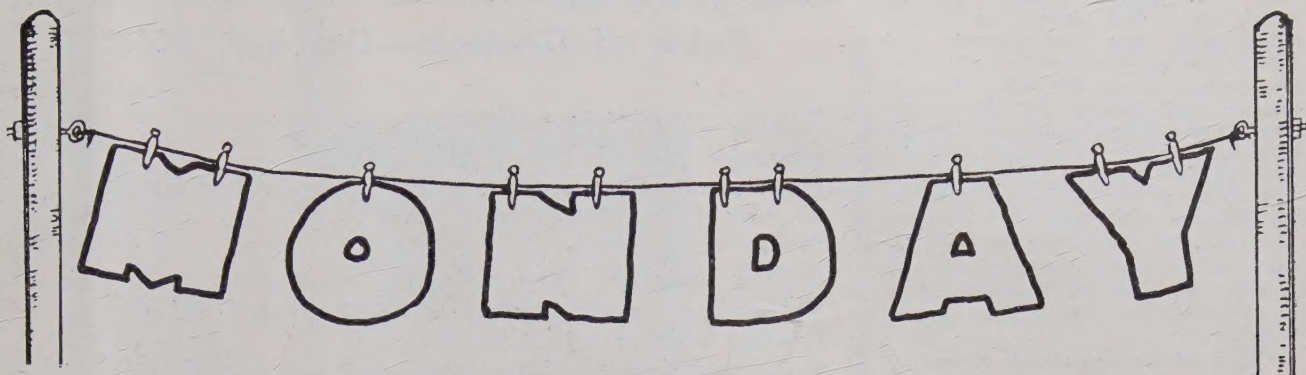
Please remember there are plenty of Berleis for everyone, and today, with the restrictions on the use of elastic, it's vitally important you get the Berlei that's exactly right for you.



Remember these points when being fitted:

- 1 Be sure you try sitting in the garment.
- 2 Be sure you ask for a little more room at the waist.
- 3 Be sure you bend and stretch in the garment to test it for freedom of movement.





DO you wake up on Monday morning wishing it was Tuesday instead? I know so many of you do, but there is no reason to dread washing day—why not try to look forward to it instead, and see just how enjoyable it can be? Here are some hints that may help you to lessen your work on Monday, and I hope you find them useful.

First of all, do you do all your washing on Monday? Where you have a family of young children, it is often a good plan to wash out the coloureds each day, for that saves them accumulating, and the work doesn't seem so bad if it is evenly distributed over the week instead of being all left to pile up for Monday morning. Soaking your boiling clothes overnight, or even for a shorter time, loosens dirt, saves time, and lessens wear. Clothes may be soaked by covering them with cold or lukewarm water, or by wetting, soaping, rolling, and putting them into a small amount of water. The latter method takes more time, but is more effective if there are no stains. Soaking for a short time in lukewarm water is as effective as soaking for a longer time in cold water. Putting very dirty clothes to soak with cleaner ones may add greatly to the labour of washing the latter. Washing soda, ammonia, borax or other chemicals are sometimes a help if added to the water when the clothing is very dirty. This may be done just to soften hard water, or as an extra help in loosening dirt when the water is soft. In the latter case the chemicals are not likely to help unless soap is used with them.

It is safe to dissolve 1 lb. of washing soda in a quart of water, and to mix 1 tablespoon of this solution in a gallon of soapy water. If the soda is mixed directly into the water used for soaking there is a danger that it may not be entirely dissolved, and may eat holes in the clothes. The necessary amount of ammonia depends upon its strength: about 3 tablespoonfuls to the gallon is safe either for the diluted ammonia for household purposes sold at the grocery store, or for the concentrated

ammonia bought at the chemist, and then diluted to about eight times its original strength. From one to one and a-half teaspoons of borax to a gallon of water is the amount usually used for soaking in soft, soapy water. If the water is hard, soaking of any kind is unsatisfactory, because of the scum that settles on the clothes. Soap will help to prevent scum from forming.

After the clothes are soaked they should be put into fresh washing water as hot as the hands can bear, with soap enough to produce lasting suds. Whenever the water becomes dirty it should be replaced by fresh suds. Special attention should be given to hems and other parts that are much soiled. If the clothes are washed in a machine the very soiled parts may need to be rubbed with soap as the garments are put into the machine. A small brush will be a great help in washing such heavy garments as corsets and overalls.

Boiling helps in cleansing soiled clothes, and in sterilising them, but they should be well washed first. If you have good outdoor drying facilities, this may help to avoid boiling. Clothes that are to be boiled should be wrung from the wash water, shaken, rubbed with soap, taking especial care over soiled places, and put into the boiler with cold water to which soap has been added. Always be sure to use plenty of water; and be sure not to boil your clothes too long because too much boiling tends to make the clothes yellowy—about 5 minutes is enough.

If the clothes are very dirty or yellowed, kerosene, turpentine or shaved paraffin may be added to the water. From 1 tablespoon to a half cup for a boiler of water may be used. If kerosene is used the clothes should be well rinsed to make sure that the odour is removed, and this thorough rinsing is even more important if turpentine is used. An easier method is to add the juice of one or two lemons to a boilerful of clothes. If clothes are not boiled they may be scalded by covering with boiling water. It may be a timesaver to you these days

to boil every week only the clothes that get very dirty, and only boil the others every three or four weeks.

Do not overlook the value of rinsing well. If not thoroughly rinsed, the clothes may become greyish, or the soap left in them may act on the bluing to form rust spots, or the soap and starch, if the latter is not pure, may yellow them.

Clothes that are very yellow from long standing or poor washing may require bleaching. They may be soaked for several hours in water containing borax in the proportion of one-quarter of a cup to 1 gallon of water. If this is not effective the clothes should be wrung loosely and spread on the grass to dry in the sun, or in cold weather allowed to freeze. The clothes may need repeated wetting, and several days out of doors. Javelle water may also be used to bleach cotton and linen clothes. It is prepared by dissolving 1 lb. of washing soda in 1 quart of boiling water, and adding $\frac{1}{2}$ lb. of chloride of lime dissolved in 2 quarts of cold water. This solution should be filtered, and the clear liquid stored in a tightly-stoppered bottle. Fabrics to be bleached may be put in Javelle water diluted with hot water ($\frac{1}{2}$ pint of Javelle water to 1 gallon of hot water) and the liquid brought only to the boiling point. Then the garments should be removed and washed thoroughly in plenty of soap and water, or in ammonia water. Only cottons and linens may be bleached with Javelle water, as it dissolves wool, turns silk yellow, and weakens the fibres of cottons and linens.

New clothes and those washed in soft water and dried in the sun should not need bluing. There are so many kinds of blue on the market, and various fabrics take them up so differently, that definite directions for the amount to use cannot be given. Table linens and open mesh fabrics, such as lace, readily take up blue. The strength may be tested by dipping a small garment into the bluing water, or by holding a little of it in the hollow of your hand. In the latter test the blue colour should be faint but decided. The blue water should be

kept well stirred, and to prevent streaking, clothes should be shaken out before they are dipped, and should not be allowed to lie in the blue water. If you are going to starch any of your clothes, the blue water may be added to the starch. Clothes that have been over-blue may be whitened by pouring boiling water over them, or, if this is not effective, boil them up again for a few minutes.

Starching clothes really lessens your work in the long run, for starched clothes keep clean much longer. Here is a good recipe for making cooked starch:—

- 1 to 4 tablespoons starch, according to the stiffness desired.
- $\frac{1}{2}$ pint of cold water.
- $\frac{1}{2}$ teaspoon borax.
- $\frac{1}{2}$ teaspoon paraffin or white fat.
- 1 quart boiling water.

Make a paste of the starch and cold water; add the borax, the paraffin or fat, and the boiling water. Boil the mixture, stirring it thoroughly, until it is clear—usually about 20 minutes. Remove any scum that forms and strain the starch while hot.

The borax may be omitted, but it helps whiten the clothes, and it, as well as the paraffin or the fat, makes the starch smoother in ironing. Alum is sometimes added (from 1 teaspoon to 1 tablespoon to a quart of water) and is useful in making the starch penetrate the fibre. It thins the paste down without decreasing its stiffening qualities.

It is impossible to give definite directions for amounts of cooked starch to be used, because it depends upon the fabric and the degree of stiffness desired. However, if the 4 tablespoons of starch have been used to the quart of water, a cup of this may be diluted with about 3 quarts of water for starching print frocks, etc. Garments should be starched wrong side out, and left so until they are sprinkled. For white clothes the starch should be as hot as the hands can stand because it penetrates better, and it should be thin enough not to leave a glazed surface when ironed. If many clothes are to be starched it is wise to keep a part of the cooked starch hot, and add it to the used starch as the latter cools down. The garments that are to be stiffest should be starched first. After thorough squeezing and dipping, the surplus starch should be wrung out and the garments either rubbed or patted. Garments wrung very dry before starching will be stiffer than wetter ones. A solution of borax water (about 1 teaspoon of borax to 1 quart of water) may be used for stiffening very thin fabrics such as laces, voiles, organdies and dimities. It gives body and crispness, similar to the original dressing.

Drying clothes outside in the sun and air sweetens and bleaches them. If the clothes line is not taken down

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it should be wiped with a damp cloth before the clothes are hung on it. Placing the basket of clothes on a handcart or an old pram will save needless stooping. Starched clothes should be brought indoors as soon as they are dry because with long hanging they lose their stiffness.

Clothes should be sprinkled evenly and thoroughly, but should not be too wet. Linens may be damped more than cottons, but starched clothes will be sticky if too damp.

A clean, hot iron is essential to successful ironing; rubbing the iron occasionally with wax or paraffin will help to keep it in good condition. Slightly scorched places on clothes may be washed out, or bleached by

wetting them and drying in the sun. Too cool an iron may leave a rust stain which may be washed out, but the fabric should be partly dried again before re-ironing. With starched clothes the iron should be hot enough to glaze the starch, otherwise the starch will stick and discolour the fabric.

Clothes should be folded with the thread of the goods, and hung until thoroughly dry in a place free from odours. If articles that need mending are sorted out as they are folded much time will be saved.

Well, there are a few general hints and directions for you to follow next Monday, and just see if you don't find washing day a lot more fun if you face it with a smile each week.

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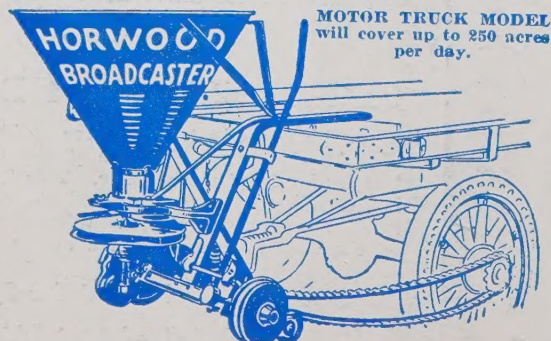
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